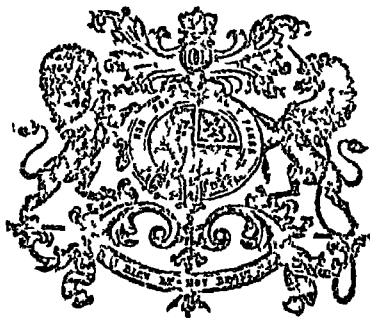


GOVERNMENT OF INDIA.
DEPARTMENT OF COMMERCE AND INDUSTRY.

MEMORANDUM ON THE GEOLOGICAL SURVEY OF INDIA.

PREPARED FOR THE

PUBLIC SERVICES COMMISSION.



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MEMORANDUM
ON THE
GEOLOGICAL SURVEY OF INDIA.

(For the Public Services Commission.)

Reorganization of the Department consequent on the report of the Public Services Commission of 1886-87.

The organization of the Geological Survey Department at the time of the Public Services Commission of 1886-87 is outlined in paragraph 102 of the Commission's report. At that time, however, the question of the reconstitution of the Department was under consideration and the Secretary of State had deferred consideration of the Government of India's proposals in this connection on account of the appointment of the Public Services Commission. The Commission made various recommendations regarding the Department which were duly considered by the Government of India in submitting revised proposals to the Secretary of State in July 1891. The proposals included a new scale of salaries and the appointment of two specialists and a palæontologist.

Despatch to the Secretary of State No. 201 (Finance and Commerce), dated the 28th July 1891.

*Despatch from the Secretary of State No. 6 (Statistics), dated 28th January 1892.

†Despatch to the Secretary of State No. 150 (Finance and Commerce), dated the 21st June 1892.

‡Despatch from the Secretary of State No. 70 (Revenue), dated the 25th August 1892.

Despatch from the Secretary of State No. 56 (Revenue), dated the 4th May 1893.

Resolution No. $\frac{8}{101}$, dated the 7th July 1894.

The Secretary of State accepted* the proposals of the Government of India generally, but asked to be informed how many officers would be employed on Geological Survey work proper and how many on mineral and other economic explorations. The information was† supplied to the Secretary of State, who then formally agreed‡ to the Government of India's proposals. The new scheme was published in Resolution Nos. 74, dated the 8th March 1893.

The Secretary of State, however, took exception to two of the conditions prescribed with the Resolution. One of these related to the application of the two-thirds pay rule to natives of India and the other enabled an officer on promotion to a higher grade to draw a salary above the minimum of the grade. The rule as to two-thirds pay was abolished and a modification was made in the other condition. The conditions of service as finally revised were published in July 1894.

This then represents the reorganization of the Service consequent on the recommendations of the Public Services Commission of 1886-87.

Subsequent Changes.

The pay of the Director.—The sanctioned pay of the Director at the time of the reorganization was Rs. 1,500 per mensem, although the actual incumbents of the office had in practice drawn higher pay than this. In 1901 the Government of India recommended that the pay should be raised to Rs. 1,500—60—1,800. This recommendation was* accepted by the Secretary of State. In 1906, in connection with the general reorganization of the Department, (see below), the Government of India recommended† that the pay of the Director should be raised to Rs. 2,000—100—2,500; but the Secretary of State, although agreeing to a special rate of pay (Rs. 2,500) for Mr. (now Sir Thomas) Holland, fixed the Director's pay at Rs. 2,000 only. This is the rate at the present time.

In 1904 the question of the method of recruitment was reconsidered, and revised proposals were submitted to the Secretary of State. At the same time it was recommended that the special post of palæontologist should be abolished and the palæontological work should be provided for by the addition to the cadre of one appointment of the grade of Deputy Superintendent. This was approved by the Secretary of State. A report is now made at the beginning of each year regarding probable vacancies.

The recommendation of the Public Services Commission of 1886-87 that the appointment of specialists should be continued was carried out until 1906, when Sir T. Holland recommended that the appointment of short term specialists should be discontinued, as they had been found unsatisfactory. The Government of India supported Sir T. Holland's proposal and the Secretary of State agreed. Two appointments were added to the general cadre in place of the specialists.

At the same time a general reorganization of the Department was sanctioned, and the scheme was published in a Resolution of the Department of Commerce and Industry dated the 7th September 1906.

Present Constitution of the Department.

The sanctioned staff of the Department, as revised in 1906, consists of—

	Monthly salary.
	Rs.
1 Director ...	2,000.
3 Superintendents ...	1,000—80—1,400.
15 Assistant Superintendents—	
For the first five years	350—30—500.
Thereafter ...	500—50—1,000.
1 Chemist ...	500—50—1,000.

Despatch to the Secretary of State No. 176 (Finance and Commerce), dated the 6th June 1901.

* Despatch from Secretary of State No. 91 (Revenue), dated 12th July 1901.

† Despatch to the Secretary of State No. 99 (Salaries, Establishment, etc.), dated 22nd March 1906.

Despatch from the Secretary of State No. 107 (Revenue), dated 15th June 1906.

Despatch to the Secretary of State No. 286, dated the 4th August 1904.

Despatch from the Secretary of State No. 159 (Revenue), dated 14th October 1904.

Despatch to the Secretary of State No. 99 (Finance), dated the 22nd March 1906.

Despatch from the Secretary of State No. 107 (Revenue), dated the 15th June 1906.

A local allowance of Rs. 150 per mensem is granted to the officer doing the work of palæontologist at head-quarters.

The leave, pension and travelling allowance rules of the officers of the department are contained in the Civil Service Regulations. They are eligible for a retiring pension after 20 years' service (Art. 476, Civil Service Regulations). Recruitment is not restricted to Europeans. There are at the present time two natives of India in the Department and one statutory Indian (Mr. Fox), who was a State technical scholar. The officers of the Department are eligible for the benefits of the Calcutta House Allowance scheme.

Despatch to the Secretary of State No. 214 (Pay and Allowances), dated the 13th June 1907.
(Sanctioned by the Secretary of State in his Despatch No. 139 (Revenue), dated the 30th August 1907).

The reorganization of 1906 adversely affected several of the officers in the Department, and special rates of pay were sanctioned by the Secretary of State in the case of these officers.

General Remarks.

The scope of Geological Survey and its relations to officials and private individuals was discussed in a note by Sir T. Holland submitted to the Royal Commission on Decentralization in India.

Appointment of Sub-Assistants.—In paragraph 7 of Resolution No. 3₁ of the 8th March 1893, it was stated that one appointment in the Assistant Superintendents' grade would be reserved to cover the cost of Sub-Assistants. The appointment of Sub-Assistants was an experimental scheme inaugurated in 1872 for the employment of Indians as apprentices or probationers in the Department. The advantages of employing natives of India in subordinate geological work, as distinct from the question of their fitness for promotion to the higher grades, was discussed by Sir T. Holland in his letter No. 1087, dated the 27th August 1903. This policy is still being continued though a post of Assistant Superintendent is not now reserved against these posts. Two Indian Sub-Assistants are at present employed in the Department on a pay of Rs. 150—10—300.

With regard to the other subordinate Scientific posts in the Department the post of Artist on Rs. 250—25—400 has hitherto been held by Europeans. The post is vacant at the present time, and all attempts to obtain a man locally having failed, the Secretary of State has been asked to select a candidate. The post of Assistant Curator of the Geological Museum (Rs. 250—20—350) is at present held by

Despatch to the Secretary of State No. 56 (Commerce and Industry), dated the 19th October 1911, and enclosure,

an Indian. The previous incumbent was an Anglo-Indian.

The appointment of two field collectors (Rs. 75—10—155) whose duty is to proceed to the field and make collections of the more important Indian rocks, minerals and fossils, was sanctioned in July 1911 as part of a comprehensive scheme for strengthening the Subordinate establishment of the Geological Survey. The intention is to fill these posts with men who have obtained a Geological training in the Calcutta University or some corresponding institution.

Letter from Mr. H. H. Hayden, Director, Geological Survey of India, No. 812, dated the 11th February 1911.

Letter from the Government of India to the Director, Geological Survey of India, No. 5305-32, dated the 14th July 1911.

Printed papers attached.

1. Despatch to the Secretary of State No. 201 (Finance and Commerce), dated the 28th July 1891.
2. Despatch from the Secretary of State No. 6 (Statistics), dated the 28th January 1892.
3. Despatch to the Secretary of State No. 150 (Finance and Commerce), dated the 21st June 1892.
4. Despatch from the Secretary of State No. 70 (Revenue), dated the 25th August 1892.
5. Resolution of the Government of India, Revenue and Agriculture Department No. 3—74, dated the 8th March 1893, with Appendix.
6. Despatch from the Secretary of State No. 56 (Revenue), dated the 4th May 1893.
7. Conditions of service as finally revised in July 1894.
8. Despatch to the Secretary of State No. 176 (Finance and Commerce), dated the 6th June 1901.
9. Despatch to the Secretary of State No. 286 (Finance and Commerce), dated the 4th August 1904.
10. Despatch to the Secretary of State No. 99 (Finance), dated the 22nd March 1906, with enclosure No. 1. Letter from Sir T. Holland No. 344-C., dated the 5th June 1905.
11. Despatch from the Secretary of State No. 107 (Revenue), dated the 15th June 1906.
12. Resolution of the Department of Commerce and Industry dated the 7th September 1906, with Appendix, giving the conditions for appointments in the Geological Survey Department.
13. Despatch to the Secretary of State No. 214 (Finance), dated the 13th June 1907.
14. Letter from Mr. T. H. Holland, No. 1087, dated the 27th August 1903.
15. Despatch to the Secretary of State No. 56 (Commerce and Industry), dated the 19th October 1911.

Enclosure—Letter from Mr. H. H. Hayden, No. 5773, dated the 25th September 1911.

List of papers not specially printed.

1. List of officers of the Geological Survey of India.
 2. Enclosures to despatch to the Secretary of State No. 201 (Finance and Commerce), dated the 28th July 1891.
 - (i) Memorandum by Mr. W. T. Blanford, dated the 31st December 1890.
 - (ii) Letter from Mr. W. T. Blanford, dated the 23rd January 1891.
 - (iii) Two Memoranda by Dr. W. King, Director, Geological Survey, dated the 21st February 1891.
 - (iv) Proposition Statement.
 - (v) Revised Schedule of conditions.
 3. Letter from Mr. T. H. Holland, Director, Geological Survey of India, dated the 2nd December 1903 (enclosure to Despatch No. 286 of the 4th August 1904).
 4. Enclosures 2 to 5 to the Despatch to the Secretary of State No. 99 (Finance), dated the 22nd March 1906.
 5. Note by Sir T. Holland on the scope of the Geological Survey, etc., submitted to the Royal Commission on Decentralization in India.
 6. Letter from Mr. H. H. Hayden, Director, Geological Survey of India, No. 812, dated the 11th February 1911.
 7. Letter from the Government of India, to the Director, Geological Survey of India, No. 5305-32, dated the 14th July 1911.
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No. 1.

No. 201 (Finance), dated the 28th July 1891.

From—The Government of India,

To—Her Majesty's Secretary of State for India.

WITH reference to the correspondence noted on the margin, we have the honour to state that we have now considered the question of the future constitution and recruitment of the Geological Survey Department in connection with the report of the Public Service Commission and with the advice received from Mr. Blanford, late Director of the Department who has himself consulted other experts in England.

Despatch to Secretary of State, No. 317 (Salaries, etc.), dated 26th November 1887.
 Despatch from Secretary of State, No. 103 (Statistics and Commerce), dated 22nd December 1887.
 Despatch from Secretary of State, No. 22 (Statistics and Commerce), dated 15th March 1888.
 Despatch to Secretary of State, No. 1 (General), dated 1st April 1890.
 Despatch to Secretary of State, No. 15 (Surveys), dated 27th May 1890.
 Despatch from Secretary of State, No. 48 (Statistics), dated 12th June 1890.

We have the honour to submit a copy of the correspondence with Mr. Blanford, together with copies of notes recorded by the present Director of the Department, Dr. King, and to submit the following remarks and proposals.

2. Under the system hitherto adopted for recruitment, the only qualification required from candidates has been a sound geological education of an academic character. Practical training has not been insisted on, but, as stated in our despatch No. 15 of the 27th May 1890, the necessity for combining scientific education with a practical training in applied science, especially in mining, has been brought prominently forward in connection with the development of the mineral resources of Burma, Baluchistan and other parts of India. After an examination of the character of the education which the officers now in the department had received, and their qualifications for practical investigation, we find that, although some of them have developed a talent for practical exploration, yet that it has been educed by what has virtually amounted to a course of apprenticeship in the later years of their service in India.

As a rule the age of candidates selected has been under 25 years, and we agree with Mr. Blanford that this should be the highest limit of age.

With regard to the condition requiring a two years' probationary course in India, we beg to point out that this has not been effectively useful in preventing the occasional introduction into the department of second rate men in consequence of the practical difficulty—we may say impossibility—of dismissing a young officer merely on the score of mediocrity, and requiring him to seek somewhat late in life, for fresh employment. It may however be possible, for grave reasons, and in rare cases, to take advantage of the rule, and we therefore desire that it should be maintained.

3. The views of the Public Service Commission were thus recorded in their report :—

Chapter X. paragraph 70.—(1) That candidates should continue to be obtained from England so long as Indian schools do not provide adequate geological and scientific education, but that selection should be made irrespective of nationality.

Paragraph 71.—(2) That appointments as Sub-Assistants should be limited to the number required to assist the upper grade, and that promotion to the upper grade should be open to Sub-Assistants who prove their ability for independent work.

Paragraph 72.—(3) That the organization of the department should not exceed that required to secure systematic investigation.

Paragraph 73.—(4) That the graded system is unsuited to a department which calls for the highest efficiency in an equal degree throughout the whole term of employment.

Paragraph 74.—(5) That the system of engaging specialists for a limited term of years is advantageous and should be continued.

With the exception of that contained in paragraph 73 or clause (4), we accept the above suggestions, but we desire to offer some remarks on the second clause. We are anxious that natives of India, whether educated here or in England, should be utilised in the department, provided that they are found to possess the qualifications essential to independent and original work in the field of geological investigation. But we are in complete accord with the Director of the Geological Department in doubting whether the system of appointing natives, who will generally be men of no very pronounced talent, as probationary Sub-Assistants is likely to be successful. Original scientific research demands mental and physical qualifications which are not apparently found in races bred in tropical climates to the same extent that they exist in the more vigorous races of northern latitudes, and we consider that the selection of natives for the department will have to be made with the very greatest care. It may perhaps be hoped that with an improved system of school education, in which habits of observation and practical enquiry will be more developed than they now are candidates will eventually be forth-coming, upon whose powers of original investigations more dependence can be placed than is the case at present. In the meantime we do not consider it desirable to make any more appointments to the grade of Sub-Assistant, which was only created as a temporary expedient.

4 We agree with the view of the Commission that the organization of the department should not exceed that required to secure systematic investigation, and we are quite of opinion that the officers of the department should not be employed in the actual working of mines. As regards the alternative suggested in clause (4) we have already intimated in our despatch No. 163, dated the 10th June 1890, that we do not think that any change in the method of promotion in the department is desirable and we are unable to accept the view of the Public Service Commission that the graded system is unsuitable. In the first place, the officers of the department become continuously more useful, at any rate for the earlier part of their employment, with each year of service; and, secondly a system of grade promotion is, in our opinion, desirable to secure efficiency of labour as well as of qualifications; for even an officer who is eminently qualified for geological research will require some incentive to make a sufficiently industrious use of his abilities, especially under circumstances in which (as is often the case in the prosecution of geological investigation) it is not easy to detect perfunctory performance of work. A reduction in the number of grades has, however, been made in the revised scheme now submitted.

The final suggestion of the Public Service Commission is in entire accord with our views, and we therefore recommend the creation of two appointments to be held by mining specialists. We propose that these posts should be filled by selected candidates who have had a practical training in mining exploration, and that they should be specially engaged for a limited term on a salary which should not exceed Rs. 1,100 a month nor be less than Rs. 700 a month. We have in a separate despatch submitted the case of Dr. H. Warth, and have explained our reasons for proposing to appoint him as the first mining specialist.

We also recommend that a third special appointment, on similar conditions regarding engagement and pay to those suggested for mining experts, should be reserved for the Office of Palæontologist in lieu of the present graded post on the monthly pay of Rs. 500 rising to Rs. 1,000. Dr. Noetling, the present holder of this appointment, has been chiefly engaged in examining the mineral oil resources of Upper Burma and as the Director of the Geological Survey considers that he is better qualified for field investigation than as a Palæontologist, we propose to transfer him to the general cadre of the Department when that can be done without involving any present or future loss of salary to Dr. Noetling, and to engage a specialist for Palæontological work. It will, we think, be an administrative advantage to the Department to give some freedom of selection to the Director by restricting the engagement of a Palæontologist to a limited period.

5. We take this opportunity of expressing our regret that the proposals for the formation of a cadre for all scientific appointments were not accepted by Your Lordship, and to explain, with reference to the remark in paragraph 4 of your despatch* on the subject, that we had no intention of interfering with the control

* No. 48 (Statistics), dated 12th June 1890.

of the Local Governments. On the contrary the tendency of our recent administration has been to bring the explorations of geological officers, whose investigations had hitherto been entirely independent of provincial authority, to a considerable extent under the direction of the Local Governments, with whom the programme of annual operations is now as a rule discussed by the Director of the Department. We are not sure whether our intention in proposing a general cadre was fully understood. Our main object was to provide for investigation in all branches of scientific research without materially increasing the amount expended in that direction. It is true that for the next few years a considerable amount of exploration in connection with the mineral resources of the country may be necessary but we cannot avoid the conclusion that expenditure on geological research will, by the maintenance of a close department of geology, be likely in the future to outweigh unduly that which will be devoted to other branches of scientific investigation. As one step therefore in the direction of our original proposals, we request that, if at any future time the services of a specialist for other than geological or mineral exploration should be considered to be requisite, we may be permitted to indent for one in place of one of the three specialists now proposed. In order to provide for the greater portion of the salaries of these specialists, we recommend the absorption of three* of the graded

* Deputy Superintendent, 1st grade, on Rs. 700—50—1,000 a month.

Deputy Superintendent, 2nd grade, on Rs. 500—40—700 a month.

Assistant Superintendent on Rs. 350—30—500 a month.

appointments on the Geological cadre as also a reduction of the minimum pay of the Superintendents from Rs. 800 to Rs. 700. We consider, however, that the introduction of the new scale as shown in the enclosed proposition statement should be deferred until such time as Mr. Middlemiss, the officer who is now last on the list of Deputy Superintendents, 2nd grade, shall have received promotion in his proper turn to a Superintendentship, in order to meet the claims of the officers in the 2nd grade of Deputy Superintendents, who have for some years past had reasonable expectations of promotions under the existing grading. The extra cost thus involved will, it is expected, be more than covered by savings in the salaries of Assistant Superintendentships on Rs. 350—30—500 a month. Four of these appointments are now vacant, two having remained unfilled since the admission of the two Sub-Assistants in order to provide for their pay; but in view of the net saving of Rs. 420 a month, or Rs. 120 a month if the personal allowance of the present Director be excluded from the present sanctioned scale, which will be effected if the revised cadre now proposed is sanctioned, it will be sufficient to set their combined salaries (each on Rs. 200—20—300 a month) against the pay of one Assistant Superintendent, thus leaving three appointments available for fresh recruits from England. One will be filled by a successor to Mr. Lake, applied for in our telegram of the 12th February last, and we consider that the remaining two Assistant Superintendentships should be kept open for the next year or two in order to allow sufficient time for the careful selection of candidates who have had the special training which may after further consideration be required by the Geological Department.

6. With reference to Your Lordship's despatch No. 103, dated the 22nd December 1887, we have cancelled the condition in the old rules under which an outfit allowance of £40 used to be granted to successful candidates in the Geological Survey.

A revised schedule of conditions is forwarded, based on the proposals made in this despatch, and we trust that they will be approved by Your Lordship.

No. 2.

No. 6 (Stationery), dated India Office, London, the 28th January 1892.

From—The RIGHT HON'BLE VISCOUNT CROSS, G.C.B., Her Majesty's Secretary of State for India,

To—The Government of India.

I HAVE considered in Council your Excellency's two letters, Nos. 201 and 202 (Finance and Commerce), dated 28th July 1891, concerning the reorgani-

zation of the Geological Survey Department, and the appointment of Dr. Warth to that Department.

2. Your Government concur for the most part in the recommendations of the Public Service Commission concerning the Geological Survey, and you propose—

- (1) that three of the graded appointments in the department should be abolished, namely,—

one Deputy Superintendent on Rs. 700 to Rs. 1,000;

one ditto ditto Rs. 500 to Rs. 700;

one Assistant Superintendent on Rs. 350 to Rs. 500;

- (2) that two new appointments on Rs. 700 to Rs. 1,100 be sanctioned, and that specialists in different branches of economic science should be temporarily appointed to these posts, as necessity might arise;

- (3) that the salary of the Palæontologist should be advanced from a scale of Rs. 500 to Rs. 1,000 to a scale of Rs. 700 rising to Rs. 1,100;

- (4) that Dr. Warth, formerly of the Salt and Forest Departments, who has recently been transferred to the Geological Department, should be nominated to one of the new specialist appointments;

- (5) that the new scale of salaries should not be introduced until Mr. Middlemiss, who was made a Deputy Superintendent on Rs. 500 to Rs. 700 in April 1889, reaches the grade of Superintendent on Rs. 800 rising to Rs. 1,000.

3. It appears from the list of your Geological officers that the department at present contains 16 officers* against a sanctioned staff of 19 and a proposed staff of 18 officers. It is possible that the two senior officers, who are both 57 years of age, may soon be retiring; but in ordinary circumstances some years must elapse before Mr. Middlemiss reaches the rank of Superintendent.

(a) *Note*.—This counts Mr. Bruce Foote, whose retirement was expected in October 1891.

4. I concur generally in the views and recommendations of the Public Service Commission, as embodied in paragraph 103 of their report and in clauses 70 to 74 of their conclusions. And I fully agree in the view that, for special investigations and scientific undertakings, it would be advantageous to secure the services of specialists for limited periods. But before sanctioning the reorganization which you propose, I wish to receive a more precise account of the number of officers who will ordinarily be employed—

- (a) on the Geological Survey proper, that is, on geological mapping, palæontology, and kindred work;

- (b) on mineral and other economic explorations.

In former years the majority of the Survey officers used to be employed on the Geological Survey proper; whereas Dr. King's memorandum of the 21st February shows that nearly the whole staff were then employed on mineral and economic explorations. As has been pointed out in the present papers, young men recruited from the School of Mines or South Kensington may and do make good Geological Surveyors after some probationary training in India; but such recruits, unless they improve their knowledge by study when on furlough, may not be efficient economic explorers.

5. I shall be glad if you would consider how far it may be possible to assign a proportion of officers for Geological Survey work proper, and a proportion for economic explorations and inquiries. It would then be desirable to determine how far the two branches of the department should be kept separate, and how far the economic branch should be manned by specialists engaged for limited periods. Such an arrangement would not debar your Government from employing officers belonging to the Survey branch on economic work; but it would enable you to decide how many permanent officers would be eventually required for the Geological Survey proper.

6. Meanwhile the two vacancies in the Deputy Superintendent grade and one in the Assistant Superintendent grade need not be filled. When the saving so secured, added to the saving that will accrue on the next appointment to the Directorship, suffices to meet the cost of a specialist, you can apply for the selection of such an officer, specifying particularly the branch of inquiry he is to undertake, the salary and allowances he is to receive, and the period for which his services will be required.

7. As at present advised, I am not prepared to sanction the increase of the Palæontologist's salary from a scale of Rs. 500 rising to Rs. 1,000 to a scale of Rs. 700 to Rs. 1,100. And, as Dr. Warth's experience does not appear to have fitted him for the duty of a specialist in economic geology, I am unwilling to approve his appointment to the office of specialist on Rs. 700 rising to Rs. 1,100. As I understand the matter, specialists, under the new scheme, will be engaged for limited periods only, and their service will not ordinarily count for pension. I shall not object, however, to your transferring Dr. Warth to the Geological Survey as Deputy Superintendent on the same salary that he enjoyed in the Forest Department.

No. 3.

No. 150 (Finance), dated 21st June 1892.

From—The Government of India,

To—Her Majesty's Secretary of State for India.

We have the honour to acknowledge the receipt of Your Lordship's despatch No. 6 (Statistics), dated the 28th January 1892, regarding the reorganization of the Geological Survey Department, and in reply to communicate, for Your Lordship's consideration, the following remarks on the subject of the proportion of officers to be ordinarily employed on scientific geological survey proper, and on economic mineral exploration, respectively. We would first explain, with reference to paragraph 4 of Your Lordship's despatch, that Dr. King's memorandum of the 21st February 1891 was intended to describe not the actual mode in which the officers of the Survey had been employed, but the extent to which they were qualified for employment, if desired, on economic explorations. As will be seen from the accompanying statement, only four out of eleven officers upon the establishment during the year were actually engaged on economic work.

2. The staff which we proposed to Your Lordship consists of a Director, twelve graded officers, a palæontologist and two specialists, and there is no doubt that abundance of useful employment could be found for the whole of this staff on scientific work. But inasmuch as, for financial reasons, we are unable to propose any further addition to the staff above enumerated in order to meet the demand for economic exploration, we propose that the number of officers to be continuously employed on scientific duties should be limited to the palæontologist and ten out of the twelve graded officers.

3. In this view two graded officers would as a rule be employed, in addition to the two specialists, on economic and mineral explorations. But this arrangement need not prevent the employment of a specialist on scientific work, just as for instance we have lately employed Dr. Diener, an Austrian Geologist, on scientific exploration in the Central Himalayas. Similarly the two graded officers who are ordinarily to be employed on economic exploration will when at liberty or when suitable occasion offers, be deputed to scientific work. The effect of our proposals therefore is that at no time will less than ten graded officers be engaged on scientific work; or, in other words, not more than one-third of the

total executive staff, including two specialists, will be utilized on economic, and not less than two-thirds on scientific, exploration.

4. With reference to paragraph 7 of Your Lordship's despatch under reply, we desire to explain that our intention with respect to the remuneration of specialists was to grant, not a progressive pay rising from Rs. 700 to Rs. 1,100 a month, but such pay as might be determined at the time of appointment, which should not be less than Rs. 700 or more than Rs. 1,100 a month. We proposed accordingly to allow Dr. Warth a salary of not more than Rs. 800 a month, as stated in our despatch No. 202, dated the 28th July 1891, and this amount he has now been permitted to draw.

5. We trust that, on consideration of the representations now submitted, Your Lordship will be pleased to sanction the arrangements proposed by us in our despatch of July last.

No. 4.

No. 70 (Revenue), dated the 25th August 1892.

From—The RIGHT HON'BLE THE EARL OF KIMBERLEY, K.G., Her Majesty's Secretary of State for India,

To—The Government of India.

I have considered in Council Your Excellency's letter No. 150, dated the 21st June 1892, furnishing further explanation concerning the scheme for the reorganization of the Geological Survey Department.

2. In a despatch of the 28th January my predecessor expressed his inability to sanction the increase of the Palæontologist's salary from a scale of Rs. 500—1,000 a month to a scale between Rs. 700 and 1,100 a month, and agreed to your transferring Dr. Warth to the Geological Survey on the same salary that he enjoyed in the Forest Department. Your remaining proposals, therefore, are—

- (1) that there should be three Superintendents on Rs. 700 rising to Rs. 1,100 a month, instead of three Superintendents on Rs. 800 rising to Rs. 1,100 a month;
- (2) that the following appointments in the Survey should be abolished namely:—
 - (a) one Deputy Superintendent on Rs. 700 rising to Rs. 1,000 a month;
 - (b) one Deputy Superintendent on Rs. 500 rising to Rs. 700 a month;
 - (c) one Assistant Superintendent (out of six) on Rs. 350 rising to Rs. 500 a month;
- (3) that Messrs. Oldham, Bose, LaTouche, and Middlemiss, in consideration of their long service in the Department and of the hopes of promotion hitherto before them should on gaining the position of Superintendent be allowed to begin in that grade with a salary of Rs. 800 a month instead of Rs. 700 a month as under the new scheme;
- (4) that two new officers on salaries not exceeding Rs. 1,100 a month, and not less than Rs. 700 a month, should be sanctioned, and that Specialists in different branches of economic science should be temporarily appointed to these posts as necessity might arise.

The result of this reorganization will be that the Geological Department will consist of—

- 1 Director.
- 3 Superintendents.
- 4 Deputy Superintendents.
- 5 Assistant Superintendents.
- 1 Palæontologist.
- 2 Specialists.
- 2 Sub-Assistants.

Total 18 instead of 19 officers as heretofore;

and it is intended that out of the fifteen Executive Officers above the grade of Sub-Assistant, at least eleven should usually be employed on survey work proper or similar scientific duty; while not more than four officers, including the two Specialists, would ordinarily be employed on economic explorations and enquiries.

3. I sanction these proposals. But I request that no new Specialist may be engaged until such time as the saving secured by reorganization, including the reduction in the salary of the Director, suffices to meet the cost of such Specialist. When you find it necessary to apply for the services of a Specialist, your application should state precisely the branches of enquiry he is to undertake, the salary and allowances he is to receive, and the period for which his services would probably be required.

No. 5.

No. 74.

Extract from the Proceedings of the Government of India in the Revenue and Agricultural Department (Surveys),—dated Calcutta, the 8th March 1893.

READ the following despatches :—

From Government of India, Financial Department, to Secretary of State, Nos. 201 and 202, dated 28th July 1891.

From Government of India, Revenue and Agricultural Department, to Secretary of State, No. 67 (Surveys), dated 8th September 1891.

From Secretary of State, No. 86 (Statistics) dated 17th December 1891.

From Secretary of State, No. 6 (Statistics), dated 28th January 1892.

From Government of India, Financial Department, to Secretary of State, No. 150, dated 21st June 1892.

From Secretary of State, No. 70 (Revenue), dated 25th August 1892.

RESOLUTION.

The papers read in the preamble have reference to the future organization and recruitment of the Geological Survey of India. Changes in the scale of pay, designations and other particulars having considerably modified the rules or conditions of appointment to the Department originally published in 1867, a revision of these rules was undertaken in 1886. Meantime, however, the constitution of the Department came under examination by the Public Service Commission appointed in that year, and it was found advisable to postpone further consideration of the subject until the recommendations of the Commission were before Government. A final settlement of the questions to be dealt with has been retarded by the discussion of proposals affecting scientific appointments generally, but the questions which specially affect the Geological Department have now been separately disposed of, and the rules as revised are appended to this Resolution.

2. The recommendations of the Public Service Commission regarding the Geological Survey of India, as recorded in Chapter X, paragraphs 70 to 74 of their report, are transcribed below :—

- (1) That candidates should continue to be obtained from England so long as Indian schools do not provide adequate geological and scientific education, but that selection should be made irrespective of nationality.
- (2) That appointments as Sub-Assistants should be limited to the number required to assist the upper grade, and that promotion to the upper grade should be open to Sub-Assistants who prove their ability for independent work.
- (3) That the organization of the Department should not exceed that required to secure systematic investigation.
- (4) That the graded system is unsuited to a Department which calls for the highest efficiency in an equal degree throughout the whole term of employment.
- (5) That the system of engaging specialists for a limited term of years is advantageous and should be continued.

3. Subject to the exception and modifications explained in the succeeding paragraphs, these recommendations have been accepted generally by the Government of India and effect has been given to them in the revised organization.

4. In the Sub-Assistant class referred to in the second of the recommendations there are at present two appointments. These were created experimentally in 1873 with the object of affording natives of India educated in the country an opening in the Department. His Excellency the Governor-General in Council is anxious that natives of India, whether educated here or in England, should be utilized in the Department, provided that they are found to possess the qualifications essential to independent and original work in the field of geological investigation. It has been found, however, owing to the difficulty which is experienced in obtaining Asiatics with pronounced talent for geological research, that the system of appointing natives as probationary Sub-Assistants is not likely to be successful. It may, perhaps, be hoped that with an improved system of school education, in which habits of observation and practical enquiry will be more developed than they now are, candidates will eventually be forthcoming upon whose powers of original investigation more dependence can be placed than is the case at present. In the meantime it is undesirable to make any more appointments to the class of Sub-Assistants, which was only created as a tentative measure.

5. The Government of India have found themselves unable to accept the view of the Public Service Commission that the graded system is unsuitable to the Geological Survey Department. In the first place the officers of the Department become continuously more useful, at any rate for the earlier part of their employment, with each year of service, and secondly, a system of grade promotion is desirable to secure efficiency of labour as well as of qualifications; for even an officer who is eminently qualified for geological research will require some incentive to make a sufficiently industrious use of his abilities, especially under circumstances in which (as is often the case in the prosecution of geological investigation) it is not easy to detect perfunctory performance of work. A reduction in the number of grades has, however, been made in the revised scheme.

6. With the suggestions of the Public Service Commission, that the organization of the Department should not exceed that required to secure systematic investigation, and that the system of engaging specialists should be continued, the views of the Government of India are in entire accord. The necessity for reserving a certain number of appointments, to be held for a limited term by persons specially qualified for scientific or economic investigations in particular branches of science, instead of creating new posts whenever the need for such investigation arises, has long been felt; and the opportunity afforded by the present re-organisation has been taken to give an extended application to the principle advocated by the Public Service Commission by providing two appointments of this class, which may, when necessary, be recruited from specialists in other branches of science besides geology. These special appointments will be made for such term as the Government of India may determine in each case, and will not ordinarily be pensionable. They are made part of the cadre of the Geological Survey Department, first, because they will frequently be given for special geological investigations, and secondly, because it is convenient that the holders of such appointments should be subjected in respect of their movements, reports and other proceedings to the control of some responsible head of department.

7. The future staff of the department, to which the sanction of Her Majesty's Secretary of State for India has been obtained, is contrasted below with that now existing, and the new scheme will come into force from the 1st of April 1893.

Present scale.	Future scale.
1 Director (Pay Rs. 1,500 and Personal Allowance Rs. 300).	1 Director Rs. 1,500.
3 Superintendents on Rs 800—50—1,100 per mensem.	3 Superintendents on Rs. 700—50—1,100 per mensem.
1 First Grade Deputy Superintendent on Rs 700—50—1,000 per mensem.	4 Deputy Superintendents on Rs. 500—40—700 per mensem.

Present scale	Future Scale.
5 Deputy Superintendents on Rs. 500—40—700 per mensem.	†5 Assistant Superintendents on Rs. 350—30—500 per mensem.
*6 Assistant Superintendents on Rs. 350—30—500 per mensem.	1 Palæontologist on Rs. 500—40—700 and then rising by annual increments of Rs. 50 to Rs. 1,000 per mensem.
1 Palæontologist on Rs. 500—40—700 and then rising by increments of Rs. 50 to Rs. 1,000 per mensem.	2 Specialists on any salary not exceeding Rs. 1,100 and not less than Rs. 700.
2 Sub-Assistants on Rs. 200—20—300 per mensem.	

*Two appointments were reserved to cover the cost of existing Sub-Assistants.

†Only one appointment is now reserved to cover the cost of Sub-Assistants.

8. In order that there may be no interruption in the purely scientific geological inquiry, the Governor-General in Council has resolved that not less than eleven officers out of the total of sixteen executive officers, shall, as a rule, be employed on such duties. Of the remaining five officers, one will be the Director and one the Palæontologist. The remaining three, two of them specialists, will be available for mineral and other economic investigations. The staff assigned to scientific geological research is smaller than the originally sanctioned scale of the Geological Survey Department. But this scale has for some time not been worked up to, and the holders of even those appointments which have been filled have been largely employed on economic instead of purely scientific work. The reductions and alterations now resolved on are fully justified both by financial considerations and the undoubted necessity of expert advice and investigation for the development of the mineral and economic resources of the empire. Orders for bringing the new scale into effect will be separately communicated to the Director, Geological Survey.

9. One important point, *viz.*, the infusion of a practical element in the training of candidates for the Geological Survey Department, which did not come under the notice of the Public Service Commission, has recently pressed itself on the attention of the Government of India. Under the system hitherto adopted for recruitment, the only qualification required from candidates has been a sound geological education of an academic character. Practical training has not been insisted on, but the necessity for combining scientific education with a practical training in applied science, especially in mining, has been brought prominently forward in connection with the development of the mineral resources of Burma, Baluchistan and other parts of the Indian Empire. After an examination of the character of the education which the officers in the Department had received and their qualifications for practical investigations, the Government of India find that, with a few notable exceptions, the appointments to the Department were filled until quite recently by officers who had not previously gone through a course of practical training, and that the talent for practical exploration, though in some instances of a remarkable character, has had generally to be developed by what has virtually amounted to an apprenticeship during the later years of service in India. The new rules accordingly provide that candidates must undergo one or two years' training in mines, or technical laboratories, as may be required by the Government of India.

APPENDIX.

Revised Conditions for Indian Geological Survey Appointments.

The Geological Survey Department is constituted as follows :—

						<i>Monthly Salary.</i>		
						Rs.	Rs.	Rs.
1	Director	...	...	...	...	1,500		
3	Superintendents	...	...	...	...	700	rising by 50 to	1,100
4	Deputy Superintendents	...	...	...	...	500	" 40 "	700
5	Assistant Superintendents	...	...	...	...	350	" 30 "	500
1	Palaeontologist	...	...	...	...	500	" 40 "	700, and then to Rs. 1,000 by increments of Rs. 50.
2	Specialists...	...	...	...	...	Specially engaged for short terms on such pay as may be agreed upon, not exceeding Rs. 1 100 per mensem.		

The rates of pay for natives of India appointed to any of the above posts will be two-thirds of the full scale of pay.

2. Appointments to the department are made, as occasion requires, by the Secretary of State for India. Every candidate for such an appointment must be in sound bodily health, and will be required to satisfy the Medical Board at the India Office of his physical fitness in all respects to perform the duties of a Surveyor, which involve considerable fatigue and exposure. His age should not exceed 25.

3. Besides a good general education, a sound education in geology is essential; a university degree and a knowledge of French or German will be regarded as important qualifications; and certificates of a high moral character will be required.

4. Candidates must also have had one or two years' practical training in mines, or in technical laboratories, as may be required by the Government of India.

5. First appointments are probationary for two years, at the end of which time the probationer, if found qualified, and continued in the department, will reckon his service for leave and pension from the date of original appointment.

6. Pay commences from date of joining appointment in India. Travelling allowances, regulated by the rules applicable to the department, are allowed at a rate calculated to cover actual expenses of tentage and locomotion.

The officer holding the appointment of Museum-Curator receives special Presidency house-rent allowance of Rs. 150 per mensem.

A first-class passage to India will be given.

7. Under ordinary circumstances, all Assistants, unless they have special claims from previous training and experience elsewhere, will enter the Department, in the lowest class, on a salary of Rs. 350 per month. This will increase annually at the rate of Rs. 30 per month; the first increase to be from the date on which the Assistant be declared to have passed the ordinary examination in the language of the country by the first or lower standard, according to the general rules provided for such examinations.

8. This annual increase will, in all cases, be granted only on the certificate of the Head of the Department, that the Assistants so recommended have proved fully deserving of the promotion by the intelligence and zeal with which their duties have been performed.

9. The said increase of salary, at the rate of Rs. 30 per month annually, will proceed until the limit of pay for the lower grade, namely, Rs. 500 per month, be attained.

10. Promotion to the higher grades will then depend on the qualification and merit of the several officers, and on the existence of a vacancy in the number of those holding these appointments. But in the event of no vacancy occurring, the candidate's claim to the same regulated increase of pay will continue (subject to certificate of qualification and good conduct), so that the rate of pay to which he will be entitled when promoted on the subsequent occurrence of a vacancy, will be regulated by his length of service.

(For instance, a qualified Assistant, having, by good service, attained to the highest pay of the Assistant grade, namely, Rs. 500 per month, may be prevented from rising to the grade of Deputy Superintendents by the fact of there being no vacancy, although he may be in every way qualified; and this vacancy may be delayed for, say, three years. In the event of his promotion after this time, he will be entitled to his former pay, plus the sanctioned increase of Rs. 40 per month for three years, or plus Rs. 120, and will at once receive Rs. 620 per month. No substantive or acting promotion to a higher grade will, however, be allowed to an Assistant Superintendent until he is in receipt of his maximum pay.)

11. While local experience and training must always hold a very prominent place in estimating the position or the promotion of Assistants, it must be distinctly understood that mere seniority of service, unaccompanied by proved ability and steady devotion to duty, gives no claim to promotion into the higher grades of the staff of the Survey.

12. The leave, leave allowances and pensions of officers of the Department will be governed by the provisions of the Civil Service Regulations applicable thereto. These regulations are liable to be modified by the Government of India from time to time.

13. The foregoing rules do not apply to the two special appointments, except in so far as they may be made applicable in each case by the Government of India or Her Majesty's Secretary of State for India.

14. The changes made by the present rules in the rules previously in force will not affect existing incumbents

No. 6.

No. 56-Revenue, dated the 4th May 1893.

From—The EARL OF KIMBERLEY, K.G., Her Majesty's Secretary of State for India,

To—His Excellency the Most Honourable the Governor General of India.

I have considered in Council the Resolution, with "Revised Conditions" of service, issued by Your Excellency's Government on the 8th March 1893, regarding the re-organization and recruitment of the Geological Survey Department. These papers were received with your Under-Secretary's letter dated the 15th March, stating that the Resolution gave effect to the scheme sanctioned in my Despatch dated the 25th August 1892.

2. There are two points in the "Revised Conditions," as published with your Resolution, in which they differ considerably from the draft "Revised Conditions" annexed to your letter No. 201, dated the 28th July 1891.

Clause (1) applies the two-thirds pay rule to Natives of India, but the policy of recent decisions has been that, in accordance with the recommendations of the Public Service Commission, pay shall be granted, on independent grounds, without reference to race. In accordance with this principle the last sentence of clause (1) should be cancelled. And with reference to the correspondence ending with Viscount Cross's Despatch, No. 82, dated the 29th November 1888, I sanction the grant to Mr. P. N. Datta of the full pay of his office, with effect from the date of the receipt of this Despatch.

3. The latter part of clause (10) of the "Revised Conditions" introduces a new rule, whereby an officer on promotion to a higher grade may draw a salary above the minimum of the grade. No such provision appears in the "Revised

Conditions" forwarded by your Government last year; I am not aware of any instance in which such a provision has been adopted; and it appears to be contrary to the spirit of article 167 of the 'Civil Service Regulations'. I am of opinion that this part of clause (10) should be cancelled. And I should be glad to know why such a departure from the ordinary rules and from the "Conditions," as previously framed, was published without my sanction.

No. 7.

Revised Conditions for Indian Geological Survey Appointments, 1894.

The Geological Survey Department is constituted as follows:—

					Monthly Salary.		
					Rs.	Rs.	Rs.
1	Director	...	...	...	1,500		
3	Superintendents	...	...	...	700 rising by 50 to 1,100		
4	Deputy Superintendents	...	...	...	500	" 40 "	700
5	Assistant Superintendents	...	...	...	350	" 30 "	500
1	Paleontologist	"	...	...	500	" 40 "	700 and then to Rs. 1,000 by increments of Rs. 50.
2	Specialists	...	...	...	Specially engaged for short terms on such pay as may be agreed upon, not exceeding Rs. 1,100 per mensem.		

2. Appointments to the department are made, as occasion requires, by the Secretary of State for India. Every candidate for such an appointment must be in sound bodily health, and will be required to satisfy the Medical Board at the India Office of his physical fitness in all respects to perform the duties of a Surveyor, which involve considerable fatigue and exposure. His age should not exceed 25.

3. Besides a good general education, sound education in geology is essential, a university degree and a knowledge of French or German will be regarded as important qualifications; and certificates of a high moral character will be required.

4. Candidates must also have had one or two years' practical training in mines or in technical laboratories, as may be required by the Government of India.

5. First appointments are probationary for two years, at the end of which time the probationer, if found qualified and continued in the department, will reckon his service for leave and pension from the date of original appointment.

6. Pay commences from date of joining appointment in India. Travelling allowances regulated by the rules applicable to the department, are allowed at a rate calculated to cover actual expenses of tentage and locomotion.

The officer holding the appointment of Museum-Curator receives special Presidency house rent allowance of Rs. 150 per mensem.

A first-class passage to India will be given.

7. Under ordinary circumstances, all Assistants, unless they have special claims from previous training and experience elsewhere, will enter the Department, in the lowest class, on a salary of Rs. 350 per month. This will increase annually at the rate of Rs. 30 per month; the first increase to be from the date on which the Assistant be declared to have passed the ordinary examination in the language of the country by the first or lower standard, according to the general rules provided for such examinations.

8. This annual increase will, in all cases, be granted on the certificate of the Head of the Department, that the Assistants so recommended have proved fully deserving of the promotion by the intelligence and zeal with which their duties have been performed.

9. The said increase of salary, at the rate of Rs. 30 per month annually, will proceed until the limit of pay for the lower grade, namely, Rs. 500 per month, be attained.

10. Promotion to the higher grades will depend on qualification and merit and on the existence of vacancies in those grades. In the case of an officer who joined the Department before the end of 1893, but not in the case of one who joined later, the following rule will apply, *viz.*, that he may, if specially qualified, count all service on the maximum pay of a grade towards increment in the salary of the next higher grade.

11. While local experience and training must always hold a very prominent place in estimating the position or the promotion of Assistants, it must be distinctly understood that mere seniority of service, unaccompanied by proved ability and steady devotion to duty, gives no claim to promotion into the higher grades of the staff of the Survey.

12. The leave, leave allowances and pensions of officer of the Department will be governed by the provisions of the Civil Service Regulations applicable thereto. These regulations are liable to be modified by the Government of India from time to time.

13. The foregoing rules do not apply to the two special appointments, except in so far as they may be made applicable in each case by the Government of India or Her Majesty's Secretary of State for India.

14. The changes made by the present rules in the rules previously in force will not affect existing incumbents.

No. 8.

No. 176 (Finance), dated 6th June 1901.

From—The Government of India,

To—His Majesty's Secretary of State for India.

We have the honour to address Your Lordship on the subject of the pay of the Director of the Geological Survey of India.

2. In His Lordship's Despatch No. 71, dated the 31st March 1866, Earl deGrey and Ripon, while sanctioning the grant to Dr. Oldham of a pay of Rs. 1,500—50—2,000, remarked that he saw no reason why the permanent salary of the appointment of Superintendent (now Director) of the Geological Survey Department should exceed Rs. 1,500 a month. This, therefore, has been since considered to be the sanctioned pay of the post. In 1876, however, when Mr. Medlicott succeeded Dr. Oldham the Marquis of Salisbury conveyed sanction in Despatch No. 27 (Geographical), dated the 6th July, to the recommendation of the Government of India that his pay should, as a special case, be Rs. 1,800 a month, but His Lordship directed that the next incumbent of the office should revert to the regular emoluments of the post. Mr. Medlicott retired in 1887, and was succeeded by Dr. King. In accordance with the instructions conveyed in His Lordship's Despatch above referred to Dr. King on his appointment drew Rs. 1,500 a month. It was, however, represented in our Financial Despatch No. 318, of 29th November 1887, and again in our Financial Despatch No. 257, of 23rd October 1888, that the Director of this important scientific department, who was necessarily required to reside in a presidency town, would be underpaid at Rs. 1,500; that this pay had been merely a theoretical one for twenty years past, and to a European officer was worth much less than when it was fixed in 1866. We, accordingly, recommended that the ordinary pay of the Director might be fixed at Rs. 1,500—60—1,800 and that Dr. King should, as a special case, receive from the date of his appointment a salary of Rs. 1,800. Lord Cross in his replies, dated 15th March and 29th November 1888, respectively, desired that the question might be postponed until a final decision on the reorganisation of the department in connection with the recommendations of the Public Service Commission had been arrived at. In our Despatch No. 163, of 10th June 1890, we informed His Lordship that we had, after careful

consideration, come to the conclusion that the recommendations of the Commission did not require us to make any change in the constitution of the department. We further informed His Lordship that, though the proposals for the incorporation of the department in a scientific cadre which were submitted in our Despatch No. 1 (General) of 1st April 1890, might eventually affect the salary of the Director, we had decided to withdraw for the present our proposal to raise the pay of the appointment and to limit our recommendations to the grant of a personal allowance to Dr. King. His Lordship accordingly, in his Despatch No. 66 (Statistics) of 24th July 1890, sanctioned a personal allowance of Rs. 300 in favour of Dr. King and further, in consideration of the delay that had occurred in the settlement of the question, authorised Dr. King's receiving a gratuity of Rs. 3,600 as an exceptional measure.

The proposal to form a separate scientific cadre was negatived by Lord Cross in his Despatch No. 48, dated the 12th June 1890, and the question of the emoluments of the Director of the Geological Survey has since remained in abeyance. Mr. Griesbach, who succeeded Dr. King in 1894, has from the date of his appointment drawn pay at the rate of Rs. 1,500 a month.

3. Mr. Griesbach has now again brought the question to our notice in a letter, a copy of which is enclosed for Your Lordship's information, in which he represents that the pay of the appointment is insufficient and further that it is less than he was led to expect would be the case when he joined the department in 1878. He accordingly asks that he may be granted a personal allowance as was done in the case of his predecessor, Dr. King.

4. We are unable to admit the validity of Mr. Griesbach's second contention, inasmuch as the statement of the conditions of appointment to which he refers expressly reserved the right to make alterations or reductions in the scale of the pay of the appointments in the Department. But after again giving the matter our careful consideration we are constrained to adhere to the view expressed in our Financial Despatch No. 318, of 29th November 1887, that the present sanctioned pay of the appointment is insufficient. The grounds on which we based our recommendations in 1887 apply with no less cogency at the present time, while there is now the further argument that the development of the mining industry in various parts of India has added considerably to the duties and importance of the appointment. We desire further to point out that the salary of the heads of the Meteorological and Civil Veterinary Departments, respectively, has been fixed at Rs. 1,800, and we do not consider that the maximum salary obtainable by the Director of the Geological Survey, who must necessarily be an officer of considerable scientific attainments, and who is the head of a department of at least equal importance, should be fixed on a less liberal scale. On these grounds we would recommend that the pay of the Director of the Geological Survey should for the future be fixed at Rs. 1,500—60—1,800.

5. We would further recommend that as Mr. Griesbach has already held the appointment for close on seven years and will retire under the 55 years' age limit in December 1902, he should be permitted to draw the maximum of Rs. 1,800 at once.

No. 9.

No. 286. (Finance), dated 4th August 1904.

From—The Government of India,

To—His Majesty's Secretary of State for India.

We have the honour to forward, for your information, a copy of a letter from the Director of the Geological Survey of India regarding the present system of recruitment of officers for his Department. Paragraphs 1 and 2 of the letter which relate to the selection of a candidate to fill a vacancy caused by the retirement of Mr. P. N. Bose, Deputy Superintendent, have been disposed of in

No. 3911, dated 2nd December 1903.

the correspondence ending with your despatch No. 92-Rev., dated the 24th June 1904. In the subsequent paragraphs of his letter the Director discusses the system of recruitment hitherto maintained and makes proposal for removing the disadvantages which have been felt in its working.

2. The revised conditions for appointments to our Geological Survey were forwarded to the India Office with our Revenue Department's letter No. 104, dated the 10th July 1894. The second paragraph lays down that appointments to the Department will be made as occasion requires. The procedure hitherto adopted has been that as each vacancy has actually occurred, we have asked the Secretary of State to select and send out to India, a suitable candidate. No attempt has been made to forecast or anticipate probable or even certain vacancies, or to secure suitable candidates beforehand. No previous intimation has been given in England when an appointment was likely to fall vacant; geologists who, at the close of their training at the University or School of Mines might have been available for appointment in our Geological Department have been compelled to seek employment elsewhere as they could not afford to wait for the chance of a vacancy; and it has followed in consequence that when a vacancy did occur and the Secretary of State was asked to select a candidate, the field of choice has been restricted to trained men who happened to be actually without employment at the moment. Experience has also shown that our Geological Survey Department is, even when it is at full strength, small in comparison with the work which has to be accomplished and with the constantly increasing demand for expert opinion, due to the development of the mineral resources of the country, which it has to meet, and it has been found necessary, on more than one occasion to postpone a geological investigation urgently required for administrative purposes, because no officer was available to carry it out. These difficulties are accentuated when the Department is compelled to remain shorthanded, often for considerable periods, while a candidate is being selected and sent out to fill up a vacancy. Our present procedure therefore involves two great disadvantages—

- (1) the restriction of the field of selection has lowered the standard of the attainments of the men selected; and
- (2) the department has remained from time to time seriously undermanned.

We propose therefore to attempt in future to forecast our probable requirements for two years ahead, and to announce two years in advance that a specified number of candidates will be appointed in a specified year. It is desirable to give two years' notice because we understand that it is necessary for a student at the School of Mines to decide at the end of his first year which special branch of study he will devote himself to during the following two years of his course.

3. It will be seen from the accompanying letter that the Director proposes that we should pledge ourselves to an appointment two years in advance, whenever at the time of the announcement, the department was not above the sanctioned strength. He points out that during the past ten years there have been altogether thirteen casualties in the Geological Department, of which five were due to death, or retirement on account of ill health, three to resignation, and five to retirement on pension; so that, judging from past experience, the occurrence of one casualty a year seems probable; and he has since informed us that in all probability one officer will shortly retire and two apply for furlough. In dealing with such a small cadre as that of the Geological Survey Department, it is never quite safe to reckon upon the continuance in the future of past rates of retirement. But it must be borne in mind, in estimating future probabilities, that the officers of the Department can retire on a substantial pension after 20 years' service and that their professional attainments, added to their Indian experience, will almost always secure them employment elsewhere. In any case the proposal could never result in the staff of the Department being more than two over strength; and even if this were occasionally to be the case for a short time, we consider that the advantages to be gained in securing a larger field for the selection of candidates and in obviating the necessity of having to work shorthanded, would outweigh any disadvantages or increased cost that might

result from a temporary over recruitment. Moreover, the present cadre contains no leave reserve, and any excess that might occur would be little more than sufficient to provide for leave requirements. We therefore recommend the proposal for your approval.

4. There are now three vacancies in the Department. In reply to our Despatch No. 3 dated 21st January 1904, you have intimated the selection of a candidate to fill up one of them. Of the remaining two vacancies one is caused by the retirement of Mr. Oldham in May last, and it will be necessary to replace him by a candidate possessing a satisfactory general scientific education and training in Geology. The third vacancy is due to the discharge in October last of Dr. Noetling who occupied the position of Palæontologist to the survey. Under the conditions for the Indian Geological Survey to which reference has already been made, the post of Palæontologist is separately graded, the incumbent beginning on a pay Rs. 500 a month and rising *pari passu* with the junior officer in the class of Deputy Superintendent to Rs. 1,000 which was formerly the maximum pay of the Superintendent class. After careful consideration we have decided that this arrangement, which has been found in practice to be inconvenient, should be abolished. It is necessary, however, that provision should be made for carrying on palæontological work in connection with the survey, and we propose to incorporate the post of Palæontologist in the cadre of the Department by the addition of one appointment in the grade of Deputy Superintendent on Rs. 500—40—700. The work, which is concerned with the authoritative identification of the specimens collected by the officers in the field, is carried out at head-quarters, and under the proposed arrangement it will be entrusted to the officer in the Department best qualified for it. We propose that the officer who, for the time being, does the palæontological work should draw a local allowance of Rs. 150 a month, which is, we consider, necessary to compensate him both for the expensiveness of living in Calcutta and for the unattractiveness of the work in comparison with employment in the general line. In order that the Department may have at its disposal an officer qualified to undertake the work, we would ask that one of the candidates now to be selected may, if possible, have special palæontological qualifications.

5. The proposed cadre of the Department and its cost are compared with the existing cadre and cost in the proposition statement which is enclosed. It will be seen that there will be a very slight increase in the average expenditure.

6. To sum up, the proposals to which we ask your sanction are—

- (i) that the special post of Palæontologist in the Geological Survey Department should be abolished and that provision should be made for palæontological work by the addition of one appointment in the grade of Deputy Superintendent to the existing cadre of the department;
- (ii) that a local allowance of Rs. 150 a month should be given to the officer of the Department actually doing the work of palæontologist at headquarters;
- (iii) that two candidates (in addition to the one whose selection is intimated in your Despatch No. 92-Rev., dated 24th June last,) should be selected to fill existing vacancies of whom one should, if possible, possess palæontological qualifications; and
- (iv) that, if the policy explained in paragraphs 2 and 3 of this despatch meets with your approval, it may be publicly announced that at least one appointment will be made in August 1905 and another in August 1906.

Should our anticipations prove incorrect, and no new vacancy occur during the next year, no announcement will be made for August 1907, so that the Department will in no case be more than two over strength, and this excess will do no more than provide for leave vacancies.

No. 10.

No. 99 (Finance), dated 22nd March 1906.

From—The Government of India,

To—His Majesty's Secretary of State for India.

We have the honour to address you on the subject of the reorganisation of the Geological Survey Department.

2. It will be observed, from the correspondence annexed to this despatch, that we have received proposals from the Director, involving a material increase in the pay of the various grades, and a considerable addition to the strength of the existing establishment. After a full consideration of the case as presented by the Director, we are satisfied that the rates of pay at present sanctioned are insufficient to attract the class of officers which we desire to secure. It is becoming increasingly difficult to enlist candidates possessing a technical training; and on several occasions recently officers have been recruited who have obtained a sound general education, but who have not received a special preparation for geological work. These officers have to be trained after their appointment to the Department: a process which not only results in a considerable loss of power, but is also open to objection inasmuch as there is no guarantee, at the time of their appointment, that the candidates selected will develop the qualities and acquire the specialised knowledge which are essential to the satisfactory conduct of the work of the Department. Mr. Holland has also shown that the present rates of pay are not liberal enough to retain officers after they have acquired sufficient experience to qualify them as mining and geological experts; and it appears certain that, unless their emoluments are increased, we shall lose the services of trained experts whose assistance would be of special value to us at present in view of the rapid development of the mining industry in India.

3. Owing to the expansion of mining enterprise in America, South Africa, Australia, and other countries, there is at present a large and growing demand for mining and geological experts. Men possessing a sound scientific education, and with practical experience of mining and geological work, command very high salaries. We are of opinion that, if the mineral resources of India are to be exploited successfully, this fact must be recognised, and the members of the Geological Survey Department must be offered salaries bearing a reasonable relation to the emoluments which they could obtain in the open market. For reasons which have been explained by Mr. Holland, it is unnecessary, however, to fix the scale of pay at the rate which the officers of the Department could command in private employ; and we have kept this fact in view when formulating our detailed proposals for the alteration of the present rates.

4. The arguments in favour of the suggestion to increase the strength of the Department have been fully explained by the Director. The rapid expansion of the economic side of the work is a new feature; and we regard it as vitally important that all possible facilities should be given to assist the development, upon a sound basis, of the mining industry in India. It is, we think, clear that the Geological Survey Department cannot, so long as it remains at its present strength, undertake the scientific work for the performance of which it was primarily constituted, and at the same time devote that amount of attention which the interests of India now demand to purely economic enquiries. The Royal Society, and the Board of Scientific Advice, are urging the necessity for the rapid completion of the geological survey of India, and we fully recognise the immediate scientific and the ultimate practical advantages of this work; but we agree with the view expressed by the Board that satisfactory progress in this direction cannot be made until the Geological Survey Department is materially strengthened.

5. For these reasons, and in view of the facts adduced by Mr. Holland, we are of opinion that an increase in the rates of pay, and an addition to the staff of the Department, are necessary. In deciding as to the scale of salaries, we have been guided by the rates at present in force in Educational, Agricultural and Veterinary Departments; and our proposals as to the pay to be granted to the Director have been made after consideration of the salaries fixed for the Chief Inspector of Mines, the Inspector General of the Forest Service, the Surveyor General, and the heads of the Agricultural and Veterinary Departments.

6. The specific recommendations which we have, after mature consideration, decided to make are as follows:—

- (i) That the short term appointments as mining specialists be abolished, and that, in their place, two appointments be added to the graded list.

- (ii) That three new appointments be added to the cadre to increase the strength of the Department, and to provide a reserve for leave vacancies.
- (iii) That an ungraded post, to be held by a trained chemist, be created, carrying a salary of Rs. 500 per mensem, rising to Rs. 1,000 by annual increments of Rs. 50. Past experience has shown that the salary proposed by the Director does not attract suitable candidates for this appointment.
- (iv) That the distinction between Deputy Superintendents and Assistant Superintendents be abolished, and that all graded officers below the rank of Superintendent be styled Assistant Superintendents, and receive a monthly pay of Rs. 350 rising to Rs. 1,000 by annual increments of Rs. 30 during the first five years, and of Rs. 50 thereafter. The Assistant Superintendent employed as palæontologist should obtain, as at present, a monthly allowance of Rs. 150.
- (v) That the scale of pay for Superintendents be fixed at Rs. 1,000 per mensem rising to Rs. 1,400 by annual increments of Rs. 80. The conveyance allowances of Rs. 60 each per mensem authorised for two Superintendents should be continued.
- (vi) That the pay of the Director be raised to Rs. 2,000—100—2,500, and that Mr. Holland, the present Director, be permitted to draw at once the maximum pay of the appointment, with exchange compensation allowance.

7. We desire to press strongly the recommendation that Mr. Holland should be allowed to draw the maximum salary now suggested for the Director. His ability, energy, scientific reputation, and business capacity are such that he could readily obtain a much higher rate of remuneration than we propose to fix as the maximum salary of the appointment; and we have reason to believe that he may find it necessary to sever his connection with the Department unless the addition which we propose to his pay is sanctioned. His zealous supervision of the operations of the Department and the profound interest which he has shown in the industrial development of the country have already borne much fruit, and it would be disastrous to lose his services at the present juncture. We trust that, in the circumstances, sanction may be accorded to the arrangement which we propose in regard to him.

8. We do not consider that exchange compensation allowance should be granted to future entrants into the Department in addition to the rates of pay now suggested. As regards present incumbents we propose that the allowance should be absorbed as soon as an officer begins to draw, on the new scale, higher emoluments than he would have obtained on the old scale, including exchange compensation allowance. As already stated, we recommend that Mr. Holland should be permitted to continue to draw the allowance, unconditionally.

9. The financial effect of our proposals is exhibited in the proposition statement appended to this despatch. They involve an additional expenditure of Rs. 4,942 12-10 a month, or Rs. 59,313-10-0 a year.

10. We would request that, if our proposals are approved, steps may be taken to select candidates for the four new appointments which will be created. Of the two appointments intended to replace those of mining specialist, one will probably be offered to Mr. Maclaren. Mr. Simpson, the second mining specialist, has with your concurrence accepted the appointment of Inspector of Mines and will leave the Geological Survey Department in May next. We would, therefore, ask that arrangements may also be made to fill that vacancy.

No. 344-C., dated Simla, the 5th June 1905.

From—T. H. HOLLAND, Esq., F.R.S., Director, Geological Survey of India,

To—The Secretary to the Government of India.

I have the honour to invite your attention to the fact that the period of agreement under which Mr. R. R. Simpson, Coal-Mining Specialist in this Department, is now serving will close on the 12th November 1906, and that Mr. J. M. Maclaren's term of agreement will end on the 28th October 1907.

2. I understand that neither of those two gentlemen would be willing either to renew their agreements on the maximum terms sanctioned for these appointments, or, with the present prospects of pay and promotion to accept appointments in the graded list of the department at positions corresponding to their periods of service. Since the first appointment was made in 1894 to the post of Mining Specialist to the Department, we have not been able to regard one of the holders, until the present incumbents were appointed, as having earned his pay or to have been as satisfactory in any respect as the average officer recruited at a lower initial pay for the graded service. To those who know the usual incomes secured by men capable of offering expert advice in questions of mineral developments, it is not surprising that only a very young and untried, or an incompetent, man could afford to accept a pay of Rs. 900 a month for a short engagement. In any case, by the time at which he has learnt sufficient of Indian mineralogy, has sufficiently appreciated the peculiarity of local conditions; and, what is more serious, has discovered his own value in the market, he leaves with an experience and an increased knowledge at a time when his services could be most profitably turned to account for India.

3. Experience has shown that our Mining Specialists have been, on the whole, of less value than the average graded officers whom they replace; they have differed from the rest, not in their special capability for dealing with practical questions, but in their deficiency of scientific knowledge, and most conspicuously in their want of an abiding interest in the country. I would strongly urge, therefore, the replacement of these posts by corresponding additions to the graded list, on which it is possible to maintain a proportion of officers with special qualifications in economic mineralogy, not necessarily with qualifications for mine-management, which is a special branch of Civil Engineering, often, if not generally, held with no more knowledge of mineralogy than an empirical acquaintance with the mineral which happens to be the object of the particular mine being managed. The officer we want for economic work should be first of all a mineralogist, thoroughly trained in the scientific foundations of his subject, and thus ready to specialize, either in its purely theoretical or its practical branches: our work, being purely advisory, never includes actual mining, and we consequently require no Mining Specialist. The mere fact that no special official designations are given to officers according to their work appears to be unimportant. All officers, whether specially qualified for economic mineralogy, stratigraphical geology or palæontology, must be qualified also for general field work, and should not be distinguished by professional titles in the graded list, although naturally in the distribution of work each year an officer's specialization would be taken into account.

4. The reluctance shown by the present two Mining Specialists to accept appointments in the graded list demonstrates the insufficiency of the present average prospects in the Department to attract the class of expert whose entertainment would be regarded by a company, holding similar mineral rights, to be a profitable investment. A junior amongst scientific experts would accept the pay offered for the posts reserved for our Mining Specialists, on account of the value of the experience gained; but no one, with even moderate qualifications, would renew his agreement even for the certainty of ultimately obtaining the present maximum pay of the Department. The case of the graded officers is different: they are recruited at a still younger age, when they know less of their potential value and in nearly all cases they are students who look forward to opportunities for scientific research, which has secured honours in the scientific world for past members of the Department. If the Government could afford to maintain a class of mere students in science, I would not ask for a revision of the present rates of remuneration. But our officers are expected to direct their energies by the shortest route possible to investigations of probable economic value to the country, and consequently seldom other than of local interest. They have been nevertheless retained for long services, some because they have become absorbed in various interests, losing the ambitions which originally brought them to the country; some because of a conservative disposition to follow mechanically the routine of a regular service, and others—a small minority—because of their possessing energy and ability sufficient to demonstrate in their purely official duties results of general scientific interest. Whilst it

may be comparatively harmless in functions of a purely mechanical and routine nature to retain officials with no ambition, it is a serious loss to engage officers devoid of initiative where their exact functions cannot be precisely defined, or where a standard of quality is not determinable : in scientific work, with the economic probabilities of a mineral-bearing country like India, it pays to obtain the best officers that can be secured, and to offer prospects worth the aims of the most ambitious of scientific men.

5. There is no doubt, I think, that the majority of our officers would not accept service under present conditions in India if they fully appreciated beforehand the limitations of their prospects when compared with those of other professional services requiring minimum qualifications equivalent to a first class University degree.

6. There is no doubt that if our officers were permitted to accept private practice, as in the case of the Indian Medical Service, their salaries would form but a small fraction of their income. In one case, an officer recently accepted his pension at a time when it was definitely decided that his professional qualifications were insufficient to permit of his promotion beyond a grade limited to a maximum of Rs. 700, and he is now making an income from private practice greater than the salary of the Director. This is the case of an officer whose abilities are conspicuously inferior to those of any now in the Department. I would not, however, recommend that our officers should be permitted to take private consulting practice. The case is different in the Indian Medical or the Public Works Department, where the issues involved are of a purely individual or purely local character. The advice which our officers could give involves wider issues of importance to Government, for whom the best of their abilities should be retained, though naturally they cannot be retained without being paid for their recognised commercial value.

7. In proposing the pay scale given below, I have considered the fact that the service carries a pension by existing rules after twenty years' service, that there are certain natural attractions in a regular service with the traditions of this Department and its position amongst the other Geological Surveys of the world, and that there are opportunities for scientific work with raw material for research in an abundance not obtainable in Europe. These are advantages sufficient to counterbalance partially the low rate of pay ; but against them should be placed the prohibition of private consulting practice, which is permitted in most Geological Surveys, besides the innumerable disadvantages of life in the tropics, separated from the society which the scientific man should consider an essential part of his life.

8. In view of the limits attached to professional Services like those of the Public Works, Forests and Medicine, it would be useless, I know, to propose a maximum greater than that established by example as the limit. But it should be remembered that any Geological Survey Officer fit to be Director of the Department (which according to the way in which it is managed, may vary in its value to Government on a scale altogether out of proportion to its cost) can afford more readily perhaps than any other professional officer to sever his connection with the service, and to rely on his value as a Consulting Adviser, even if his scientific reputation is insufficient to command a first-class Professorship. The value of the highest post in the Department is the standard by which an able and ambitious officer gauges the value of the service, and the Director's pay should be, therefore, sufficiently beyond that of the other officers to stimulate special activity in the lower grades ; for it should be remembered that, unlike a service in which executive routine necessarily limits the value of the very best officer, the scientific man's value to the country is directly dependent on his activity in developing work along new lines. It may be inexpedient to offer a pay beyond that recognised as a maximum in the Survey Department, in the Forests, Public Works and Medical Departments ; but I firmly believe that for every rupee by which the Director's pay is reduced below Rs. 3,000, the country will in the long run lose many times the amount so saved.

9. Apart from the fact that the post involves responsibilities greatly in excess of those incurred by the Superintendents, the administrative work cuts the Director off absolutely from the privileges of further scientific research, and consequently, at the present scale of pay, makes the post, by common consent of the Department, less to be desired than that of a Superintendent. The officer selected for the post of Director should be marked beyond his colleagues with abilities recognised, by some definite distinction in the scientific world, as fit to deal professionally with the variety of subjects under his control. As most of the results of the Geological Survey officers' work are issued in the *Records* and *Memoirs*, which are now recognised by the scientific world as *publications*, there is the same opportunity in this country as there is in Europe for the geologist to obtain recognition for his work, and the Government are able, consequently, to obtain a valuation of an officer's scientific work from their advisers in England. The supplementary qualification of administrative capacity required of the Director can be judged more precisely by his work as a Superintendent, for which promotion should be made by selection from the general body of officers below.

10. In proposing the salary of Rs. 1,100—100—1,600 for the Superintendents, I have kept in view the fact that whilst their qualifications and probable length of service should demand a recognition comparable to that given to the Superintending Engineers in the Public Works Department, or to Conservators in the Forest Department, their immediate responsibilities as regards Government money are less, and their opportunities for scientific work should be regarded as a distinct advantage worth a certain amount of sacrifice of salary. It should be remembered also that, unlike Superintending Engineers, the post of Superintendent of the Geological Survey of India, which is the highest post the average officer can hope to obtain, does not carry the extra pension given for three years of approved service to the Superintending Engineers, and the salary proposed is thus the minimum that could be fairly offered to officers whose education and technical training involve an expense greater than that necessary for the recruit to the Public Works Department or the Forests. There is no officer in the Department at present who has not obtained either a first class degree or an equivalent diploma in science, and most have double degrees, or a University degree as well as a professional diploma. It is to the interest of Government to offer rewards which will be worth the ambitious work of officers whose abilities are thus proved by their qualifications on appointment: the selection of the right kind of recruit is not more important than the just treatment of an officer after appointment, who, according to his prospects, may become a purely mechanical official, or one who, as should be the case in scientific work, makes his own work, and finds new opportunities for scientific and economic developments.

11. For the rest of the Département I would propose to abolish the distinction between the Deputy and Assistant Superintendents, granting a rate of pay regulated by length of approved service, from the initial pay of Rs. 350 to the maximum of Rs. 1,000 after 15 years' service, obtained by increments of Rs. 30 for the first five years, Rs. 40 for the second five years and Rs. 60 for the last five years. There is no essential difference between the functions of the Assistant Superintendents and the Deputy Superintendents, and the division of such a small number of officers into two groups of fixed numerical limits introduces a cause of serious irregularity in the rate of promotion. In some cases officers have been promoted to the Deputy Superintendents' grade immediately on completion of their probation of two years; in other cases they have been delayed for years at the top of the lowest grade for a vacancy in the next above. The division into two grades is doubtless intended to reduce the possible variations in the total budget for salaries; but seeing the officers are so few in number, the risk of unforeseen financial variations is probably less than that involved in any one grade of the Forests, Public Works or Telegraph services.

12. With regard to the number of officers to be entertained in the lowest grade, or Assistant Superintendents, as they might all be called, I would propose as a minimum the total of the present two grades of Deputy and Assistant Superintendents, plus two for the absorbed post of Mining Specialists, and the creation of three additional posts to cover the estimated absence of about 20 per cent. of the officers on leave, for which I find no provision has been

made hitherto in estimating the working strength of the Department. The nominal strength of the graded list would thus be 18 instead of 13 as at present.

13. In addition to the officers provided for the ordinary work of the Geological Survey, all necessitating the combination of specialization in particular branches of geology with experience and ability for field work, it is necessary to employ a trained chemist for the solution of many of our problems. This is, I consider, our most pressing want at present, and it is in this section of our work that we are able to demonstrate a greater neglect of urgent questions than in any other part. We are compelled to rely frequently on rough qualitative determinations in many cases where exact quantitative work is required to give our results the precision necessary for practical ends, whilst analogy with other countries with a similar petrological variety forces the conclusion that our failure to recognise certain minerals, especially those of the rare earths which have recently acquired a commercial value, is due to want of facilities for the more advanced developments of analytical chemistry. Hitherto we have been compelled to rely on our ability to retain as Curator at head-quarters an officer who has a special knowledge of chemistry. This, however, very often results in withdrawing an officer who at the same time may be our only specialist in some other branch of work in the field. We have also relied on the fact that the present Assistant Curator has developed, during his service of 21 years, a special aptitude for chemical work; but his employment in the Laboratory withdraws his services from the Museum, which has not been developed for the public education in many ways which we know would be of value to the country, whilst at any time we may be handicapped by our inability to replace the Assistant Curator when he is forced to take leave. Besides the fact that the total strength available in the Laboratory is insufficient to meet our growing requests for chemical work, there are branches of mineral chemistry which cannot be taken up by an officer of general training: the work requires a specially trained officer, and in order that his work may be successful he must be able to devote the whole of his time to it without fear of the frequent interruptions which the Curator and Assistant Curator are subject to when at work in the Laboratory.

14. The chemist should, I consider, be ungraded: his work would never qualify him for promotion to the grade of Superintendent, but his pay might be governed by the rules proposed for the Assistant Superintendents, namely, a rise from Rs. 350 to a maximum of Rs. 1,000 in 15 years, regulated by increments of Rs. 30, 40, and 60 for the three periods of five years each.

15. The total nominal strength of the Department, estimated by the conversion of the Mining Specialists appointments, the addition of 20 per cent. to meet leave vacancies, and the appointment of a special chemist, would thus be as follows:—

Director	...	...	...	...	...	1
Superintendents	...	...	...	...	...	3
Assistant Superintendents	...	...	...	...	...	15
Chemist	...	...	...	...	...	1
Assistant Curator	...	...	...	...	...	1
TOTAL						21

As to whether this proposed strength is sufficient to meet the actual requirements of the country is not easily determined with precision. As far as I can find, the present strength of the Department was originally determined, on no other grounds than that of an experimental guess, and since the cadre was originally determined, Burma has been added to the empire without any provision being made to meet the requirements of a country which in mineral value is probably not much behind the rest of India. Whether we work on purely scientific lines, or spend the whole time of the Department in simple prospecting, the ultimate aim is, of course, the development of the mineral resources,

and the question of strength must thus be regulated on a scale which would be regarded as a sound investment in view of the mineral developments which will arise from, or will be healthily directed as the outcome of, the Geological Survey work. There is no doubt that the work done in the past in the simple preparation of the geological map has been paid for many times over in its assistance to the existing mining industries, the maps of the coalfields being, for instance, the daily guide to the coal-mine managers in planning their work. There is not, I think, the slightest fear of exaggeration in asserting that the work described in the last General Report alone will return to the country, and probably in the form of revenue to the Government, a value in excess of what the Department has cost since its foundation in 1850.

16. There are, however, two ways in which a fair approximation can be obtained of what should be regarded as an economic outlay in a Geological Department: (1) By taking the minerals known to exist in the country, one can make a rough estimate of the number of experts who would be required by a company holding all the mineral rights to complete the exploratory work in, say, 10 years, and to carry on the work of revision *pari passu* with subsequent development:—

- (a) The revision of our coal-field maps from the data obtainable by recent mining, and the prospecting of areas where coal is known to exist with an uncertainty about its economic value, would occupy the full time of an officer specialized in coal.
- (b) The undeveloped oil-fields of which we have but vague ideas in Upper Burma and Assam, will require some years to survey, and developments in progress will require the perpetual entertainment of an officer who makes this subject his special study.
- (c) Amongst the metalliferous minerals, iron, manganese, nickel and aluminium will occupy the full time of an officer with knowledge also of the fuel questions.
- (d) The more valuable metals, gold, tin and copper, all of which are known to form prospecting propositions in India, cannot be investigated by less than the equivalent of one officer continuously employed.
- (e) Of the remaining minerals, I would group steatite, magnesite, corundum, mica, gemstones, graphite, building stone and slate as a series of minerals relating to which the questions to be solved would occupy the full time of an officer; the chemical questions connected with salt, saltpetre, the soda compounds, sulphuric acid, &c., mineral fertilizers, and minerals of the rare earths are sufficient for another, whilst water and engineering questions would occupy the whole attention of a third officer.
- (f) In addition to the seven officers estimated as necessary for the minerals of economic value known to exist in the country, there should be a proportion devoted to the simple geological mapping of unsurveyed areas, and for this a staff of at least four would be required for Burma, three for the Central Provinces, two for the work of revision in areas of special scientific or economic importance, and three for the unsurveyed areas in Central India, Rajputana and Gujarat. There are also in the Himalayas large areas still unsurveyed, sufficient to take the full time of one officer.
- (g) The head-quarters staff should include the Director, a Superintendent in charge of the correspondence and the issue of publications, a Palaeontologist, the Curator of the Museum, who also acts as Mineralogist and Petrologist, the present Assistant Curator and a chemist for whom a special proposal is made in paragraph 13.

17. This estimate requires 26 officers for continuous work, and the nominal strength, consequently, should be 31 to meet leave vacancies by an addition of about 20 per cent. to the actual working strength.

18. It is understood, of course, that this estimate of the work by subjects does not imply that a single officer would spend the whole time of his service at coal, or petroleum, or at any one of the groups of minerals. The estimate is the outcome of our experience that if we took up, as we should do, all the questions referred to us about, say, coal or petroleum, or either of the groups of minerals, we should find that on an average one officer would be continuously employed in each of these divisions, either in advising the Local Governments, or in examining new occurrences. On account of our limited staff, the latter section of this work is now necessarily neglected in most of the groups, whilst in giving advice and information we are merely drawing on the results of the surveys made in the past before developments occurred, and in many cases we have to rely on mere reconnaissances of unsurveyed ground.

19. A second method of estimating the advisable strength of the Department can be adopted by dividing the total area geographically, estimating a minimum of one officer necessary to deal with the problems of each of the provincial areas, Assam, Baluchistan, Bengal, Bombay, Central India, Madras (with Coorg), Punjab, Rajputana and the United Provinces, estimating three for the Central Provinces, where besides large unsurveyed tracts, there are signs of unusual activity in mineral development, and six for Burma, most of which have been so far unsurveyed, although it is possibly more promising than any of the provinces from a mineral point of view. The estimate of six for Burma is equivalent to that of four for purely exploratory work given in paragraph 16 (f) *plus*, say, two as its share of the special minerals. We have thus an estimate of 18 officers according to the provincial divisions; to this staff should be added six for the special work at head-quarters as detailed in paragraph 16 (g) and an addition of 20 per cent., or say, five to meet leave vacancies, making a total nominal strength of 29.

20. The estimate of about 30 officers which I have made is the minimum which I consider to be necessary for the work which I see in view as work of direct benefit to the country. But on account of the difficulty of recruiting at present, I would not propose the immediate appointment of officers beyond the total strength of 20 as detailed in paragraphs 12 to 16. The scheme for regular appointments proposed in my letter No. 3011 of the 2nd December 1903, which has received the approval of the Secretary of State, has already had a beneficial influence on our system of recruiting; but its effects are limited by the small prospects of the service, and I think consequently it would be unwise to recruit beyond the total strength of 20 until it has become generally known that the pay scale has been sufficiently improved to command the services of men who now consider it wiser to avoid the ties of permanent service in India. Unless the pay scale is revised along the lines proposed, I should consider it unwise to attempt to increase the normal strength of the Department even to as much as 20 and the proposals for the revision of the pay scale with the special terms offered to the Superintendents and the Director are made as much with the intention of stirring up the ambitions of those already in the service, as with the certainty of creating competition amongst recruits. It should be remembered that, for many years there has been absolutely no competition for appointments in the Geological Survey, and that often there has been a difficulty in persuading suitable candidates to accept the posts.

21. Briefly, my proposals are as follows :—

- (a) that the short term appointments for Mining Specialists be changed for two appointments in the regular graded lists;
- (b) that three new appointments be made to cover leave vacancies;
- (c) that the distinction between the Deputy Superintendents and Assistant Superintendents be abolished, and that all graded officers below the rank of Superintendents be styled Assistant Superintendents with a pay rising from Rs. 350 to Rs. 1,000 on completion of 15 years' approved service, the rise being regulated by annual increments of Rs. 30, Rs. 40 and Rs. 60 for the respective first, second and third periods of five years;

- (d) that an ungraded post of chemist be created, carrying salary and allowances on the terms provided for the Assistant Superintendents;
- (e) that the pay scale for the Superintendents be raised to Rs. 1,100—100—1,600, and that the Director's salary be increased to Rs. 3,000.

No. 11.

No. 107 (Revenue), dated India Office the 15th June 1906.
 From—His Majesty's Secretary of State for India,
 To—His Excellency the Right Honourable the Governor General of India in Council.

I have had under my consideration in Council the letter of Your Excellency's Government, No. 99* (Finance), dated the 22nd March 1906, submitting proposals for the reorganization of the

Reorganisation of the Indian Geological Survey Department.
Pro. A, March 1906, Nos. 20 25.

Geological Survey Department.

2. Of the six proposals enumerated in paragraph 6 I sanction those numbered i to v inclusive, and I agree to the proposal in paragraph 8 that, in view of the improved rates of salaries now sanctioned, exchange compensation allowance should not be granted to future entrants into the department, and that, as regards present incumbents, the allowance should be absorbed as soon as the officer begins to draw, on the new scale, higher emoluments than he would have obtained on the old scale.

3. With regard to the proposal numbered vi that the pay of the Director be raised to Rs. 2,000—100—2,500 a month, I have to remark that the pay of this post was raised in 1901 from Rs. 1,500 to Rs. 1,800 a month, so as to bring it on a level with the pay of the heads of the Meteorological and Civil Veterinary Departments. The Geological Survey, from an administrative point of view, is not a specially onerous or important Department, and the salary proposed for the Director is in excess of what the ordinary responsibilities of the post would seem to require, and disproportionate to the general scale of salaries in the Department. I am willing, however, to sanction a pay of Rs. 2,000 a month for the Director, and to allow the incumbent of the post to receive exchange compensation allowance, as an exception to the general rule on the subject of that allowance which is to be applied in future to the department.

4. Mr. Holland's case is exceptional, and in the circumstance stated by you may be most appropriately dealt with by granting him a personal allowance of Rs. 500 a month in addition to the salary of Rs. 2,000 a month now sanctioned for the post. I accordingly sanction the grant to him of a personal allowance of that amount.

5. I shall take steps to recruit qualified persons for the five posts mentioned in the last paragraph of your letter.

No. 12.

No. 7092—7106—151.

RESOLUTION.

Simla, the 7th September 1906.

THE Government of India have recently had before them the question of the reorganization of the Geological Survey Department. Owing to the expansion of mining enterprise in America, South Africa, Australia and other countries, there is at present a large and growing demand for mining and geological experts. Men possessing a sound scientific education and with practical experience of mining and geological work command very high salaries.

This has not been without effect on the Geological Survey Department, and it has become increasingly difficult to enlist candidates possessing a technical training. It has, in fact, become evident that the rates of pay in force are insufficient to attract the class of officers whom it is desired to secure, and that it is necessary to offer to geological officers salaries bearing a reasonable relation to the emoluments which they could obtain in the open market. The only alternative to an increase in the rates of pay would be to recruit officers, who have obtained a sound general education, but who have not received a special preparation for geological work. In that case it would be necessary to train them after their appointment to the Department, a process which would not only result in a considerable loss of power, but is also open to objection inasmuch as there would be no guarantee at the time of their appointment that the candidates selected would develop the qualities and acquire the specialised knowledge, which are essential to the satisfactory conduct of the work of the Department. It was also found that the rates of pay were not liberal enough to retain officers after they had acquired sufficient experience to qualify them as mining and geological experts. Government were therefore threatened with the danger of losing the service of trained experts at a time when their services were absolutely indispensable.

2. Not only was a material increase in the pay of the various grades required, but also a considerable addition to the strength of the existing establishment. The rapid expansion of the economic side of the work is a new feature, and it is regarded as vitally important that all possible facilities should be given to assist the development upon a sound basis of mining industries in India. The necessity for the rapid completion of the geological survey of India has frequently been urged on the Government of India, who fully recognize the immediate scientific, and the ultimate practical, advantages of this work, but it was felt that the Geological Survey Department could not with its existing strength undertake the scientific work, for the performance of which it was primarily constituted, and at the same time devote that amount of attention which the interests of India now demand to purely economic enquiries.

3. Proposals for the reorganisation of the Department were therefore submitted to the Secretary of State, and have now received his approval. The following are the changes which have been made in its constitution :—

- (1) Two short term appointments of mining specialists have been abolished, and two new appointments have been added to the graded list in their place.
- (2) Three new appointments have been added to the cadre to increase the strength of the Department and to provide a reserve for leave vacancies.
- (3) An ungraded post, to be held by a trained chemist, has been created carrying a salary of Rs. 500 per mensem rising to Rs. 1,000 by annual increments of Rs. 50.
- (4) The distinction between Deputy Superintendents and Assistant Superintendents has been abolished, and all graded officers below the rank of Superintendent will be styled Assistant Superintendents, and will receive a monthly pay of Rs. 350 rising to Rs. 1,000 by annual increments of Rs. 30 during the first 5 years and of Rs. 50 thereafter. One Assistant Superintendent employed as Palæontologist will obtain, as at present, a monthly allowance of Rs. 150.
- (5) The scale of pay for Superintendents, has been fixed at Rs. 1,000 per mensem rising to Rs. 1,400 by annual increments of Rs. 80.
- (6) The pay of the Director has been raised from Rs. 1,500—60—1,000 to Rs. 2,000 fixed. A personal allowance of Rs. 500 a month has been especially sanctioned for the present Director, Mr. Holland, in addition to the pay of the appointment.

4. In view of the increase in the emoluments of the service exchange compensation allowance will not be granted to future entrants into the Department in addition to the rates of pay now sanctioned. As regards present incumbents, the allowance will be absorbed as soon as an officer begins to draw on the new scale higher emoluments than he would have obtained on the old scale including the allowance. Both the present Director and his successors will, however, continue to draw it.

5. The revised scheme will come into force from 1st July 1906. The staff of the Department as it stands after reorganization is contrasted below with the existing strength :—

	Rs.		Rs.
1 Director on	1,500—20—1,500	1 Director on	2,000
2 Superintendents	700—50—1,100	3 Superintendents on	1,000—80—1,400
3 Deputy Superintendents	500—40—700	15 Assistant Superintendents on Rs. 350—30—500 for first five years and Rs. 500—50—1,000 thereafter.	
3 Assistant Superintendents on	350—30—500		
2 Mining Specialists on salaries not exceeding Rs. 1,000 and not less than Rs. 700.	.....	
.....		1 Chemist on	500—50—1,000
1 Assistant Curator on	250—350	1 Assistant Curator on	250—350

6. The conditions of service in the Department have been revised and are annexed to this Resolution.

Secretary to the Government of Madras.
 " " " Bombay.
 " " " Bengal.
 " " " United Provinces.
 " " " the Punjab.
 " " " Burma.
 " " " Eastern Bengal and Assam.

The Hon'ble the Chief Commissioner of the Central Provinces.
 The Chief Commissioner of Coorg.
 The Chief Commissioner of Ajmere-Merwara.
 The Hon'ble the Agent to the Governor General and Chief Commissioner of the North-West Frontier Province.
 The Hon'ble the Agent to the Governor General in Baluchistan.

ORDER.—Ordered that a copy of the foregoing Resolution be forwarded to the Local Governments and Administrations marginally noted, to the Finance Department and to the Director, Geological Survey of India, for information, and it be published in the Supplement to the *Gazette of India*.

W. L. HARVEY,
Secretary to the Govt. of India.

APPENDIX.

Conditions for Indian Geological Survey Appointments.

1. The Geological Survey Department is at present constituted as follows :—

					Monthly salary. Rs.
1	Director	...	...	...	2,000
3	Superintendents	...	...	...	1,000 rising by Rs. 80 to Rs. 1,400.
15	Assistant Superintendents :—				
	For the first five years	...	...	...	350 rising by Rs. 30 to Rs. 500.
	Thereafter	...	...	...	500 rising by Rs. 50 to Rs. 1,000.
1	Chemist	...	...	...	500 rising by Rs. 50 to Rs. 1,000.

A local allowance of Rs. 150 per mensem is granted to the officer doing the work of Palæontologist at head-quarters.

No allowance of the nature of exchange compensation will be given.

2. Appointments to the Department are made by the Secretary of State for India. They will usually be made about July of each year, and the probable number of appointments will, if possible, be announced about two years in advance. The age of candidates should not exceed 25. Every candidate must be in sound bodily health, and will be required to satisfy the Medical Board at the India Office of his physical fitness in all respects to perform the duties of the Geological Survey, which involve considerable fatigue and exposure.

3. Besides a good general education, a sound education in geology is essential : a University degree and a knowledge of French or German will be regarded as important qualifications ; and certificates of a high moral character will be required.

4. Candidates must also have had one or two years' practical training in mines, or in technical laboratories, as may be required by the Government of India.

5. First appointments are probationary for two years, at the end of which time the probationer, if found qualified, and continued in the Department, will reckon his service for leave and pension from the date of arrival in India.

6. A first class passage to India is given subject to the condition that its cost shall be refunded in the event of an officer resigning the service, on grounds other than certified ill-health, before the expiry of the period of probation. If, on the expiry of the period of probation, the officer's service is determined, or if he is compelled by certified ill-health to resign the service before such expiry, he will be provided with a free first class passage back to England. Pay commences from date of arrival in India. Travelling allowances, regulated by the rules applicable to the Department, are allowed at a rate calculated to cover actual expenses of tentage and locomotion.

7. Under ordinary circumstances, all Assistants, unless they have special claims from previous training and experience elsewhere, will enter the Department, in the lowest class on a salary of Rs. 350 per mensem. This will increase annually at the rate of Rs. 30 per mensem for the first five years ; thereafter at the rate of Rs. 50 per mensem until the limit of pay for the grade, *viz.*, Rs. 1,000, per mensem is reached ; the first increase to be from the date on which the Assistant shall be declared to have passed the ordinary examination in the language of the country by the first or lower standard, according to the general rules provided for such examinations.

8. This annual increase will, in all cases, be granted only on the certificate of the Head of the Department, that the Assistants so recommended have proved fully deserving of the promotion by the intelligence and zeal with which their duties have been performed.

9. Promotion to the grade of Superintendent will depend on qualifications and merit and on the existence of vacancies in that grade. In the case of an officer who joined the Department before the end of 1893, but not in the case of one who joined later, the following rule applies, *vis.*, that he may, if especially qualified, count all service on the maximum pay of a grade towards increment in the salary of the next higher grade.

10. While local experience and training must always hold a very prominent place in estimating the position or the promotion of Assistants, it must be distinctly understood that mere seniority of service, unaccompanied by proved ability and steady devotion to duty, gives no claim to promotion into the higher grades of the staff of the Survey.

11. The leave, leave allowances and pensions of officers of the Department will be governed by the provisions of the Civil Service Regulations applicable thereto. These regulations are liable to be modified by the Government of India from time to time.

No. 13.

No. 214 (Pay and Allowances), dated 13th June 1907.

From—The Government of India,

To—His Majesty's Secretary of State for India.

We have the honour to forward a copy of a letter from the Director, Geological Survey of India, No. 5945, dated the 4th December 1905, in which he points out the effect, on some of the present incumbents of that department, of the reorganisation scheme which was sanctioned in your Revenue Despatch No. 107, dated the 15th June 1906.

2. The changes effected by the scheme include the abolition of the grade of Deputy Superintendent and the introduction of a time-scale for all officers below the rank of Superintendent, who are to receive a monthly pay of Rs. 350 rising to Rs. 1,000 by annual increments of Rs. 30 during the first five years, and of Rs. 50 thereafter. The pay of the grade of Superintendent was also raised from Rs. 700—50—1,000 to Rs. 1,000—80—1,400. The rules which regulate the grant of initial pay on transfer to an appointment on progressive pay are contained in Articles 157-A and 158 of the Civil Service Regulations, and the effect of these rules in the case of the Superintendents and of the Assistant Superintendents of the Geological Survey is shown in the statement attached to the letter of the Comptroller, India Treasuries, No. G. A.-2485, dated the 15th November 1906, which forms an enclosure to the Director's letter. It will be seen that, under the operation of these rules, on many of the present incumbents the scheme does not confer any immediate benefit, and it will further be noticed that the officers who would have been entitled under the old scale to their annual increment on various dates will in future draw them on the 1st July in each year, since the scheme was introduced on the 1st July 1906, and that they will thus lose in pay by the postponement of the date on which the increment is due. It is clear that special orders are required to protect present incumbents against loss by the introduction of the time-scale : and we have therefore the honour to submit for your favourable consideration the proposals explained in the two succeeding paragraphs.

3. With regard to the four Assistant Superintendents whose names are

	Pay under proposed rule.	Pay under reorganisation scheme.
Mr. Datta ...	Rs. 1,000	Rs. 700
" Vredenburg ...	750	650 and in personal allowance.
" Walker ...	380	380
" Hallows ...	380	380 (Will receive increment on an earlier date.)

given in the margin we recommend that these officers should be granted the pay to which they would have been entitled had they been serving on a time-scale from the commencement of their service. The application of this rule, which was sanctioned in the case of the Enrolled Officers of the Finance Department in your Financial

Despatch No. 51, dated the 11th May 1905, will benefit Messrs. Datta, Vredenburg and Hallows and will protect Mr. Walker from future loss. In the case of Messrs. Fermor, Pilgrim Tipper, and Brown, however, the application of the rule

would result in an immediate decrease in their pay, while it would retard the date of increment of Mr. Pascoe by six months and that of Mr. Cotter by eight months. The first three of these officers obtained rapid promotion to the old grade of Deputy Superintendent and have thus reached their present scale of pay in far less time than they would have done under a time-scale. Again Messrs. Pascoe and Cotter have benefitted by the operation of a rule under which the first increment, in the case of officers of the Geological Survey, is granted on passing the vernacular test irrespective of the period of service rendered. Similarly Mr. Brown drew his first increment before completing his first year's service on passing the vernacular test. We therefore recommend that—

- (i) Messrs Fermor, Pilgrim and Tipper should remain on the old scale of pay of Deputy Superintendent, *viz.*, Rs. 500—40—700 and be granted exchange compensation allowance. They should stop at Rs. 700 till they become entitled under the time-scale to an amount exceeding Rs. 700 and exchange compensation allowance.
- (ii) Mr. Brown should be considered as having reached on the 1st July 1906 the Rs. 380 stage in the scale of Rs. 350—30—500, his next increment accruing on the 1st June 1907.
- (iii) Messrs. Pascoe and Cotter should count increments from the dates under the scale obtaining previous to the reorganisation.

4. As regards the Superintendents, we would observe that neither Mr. La Touche nor Mr. Middlemiss will benefit under the reorganisation scheme. They have rendered long service and have been 8 and 5 years, respectively, on the maximum of the old grade of Superintendent (*viz.*, Rs. 1,000), and in view of the fact that one of our objects in reorganising the department was to benefit present incumbents as well as to attract suitable recruits, we strongly recommend that they should be given, with effect from the 1st July 1906, the maximum pay of their grade in the new scale, *viz.*, Rs. 1,400.

No. 14.

No. 1087, dated Calcutta, the 27th August 1903.

From—T. H. HOLLAND, Esq., A R.C.S., F.G.S., Director, Geological Survey of India,

To—The Secretary to the Government of India.

I HAVE the honour to inform you that Lala Kishen Singh, Sub-Assistant in this Department, having been granted an invaliding certificate by the Standing Invaliding Committee of Rawalpindi with the recommendation that he be retired from the service, necessary steps have been taken to verify his services and to apply for a pension on his retirement from the 5th June last.

2. The retirement of Sub-Assistant Kishen Singh completes a part of the experimental scheme for the employment of native apprentices or probationers in this Department, ordered by Government in Mr. Hume's letter No. 676 of the 18th October 1872. An application just made by the other Sub-Assistant, Hira Lal, to retire on the completion of 30 years' service will, if permitted, complete this experiment. The time has thus arrived for recommending, for the further consideration of Government, the decision recorded in Resolution No. 3—74 of the 8th March 1893 (paragraph 7, footnote), namely, that one appointment in the Assistant Superintendent's grade is reserved to cover the cost of Sub-Assistants.

3. I have carefully examined the reports which have been made from time to time with regard to the work of the Sub-Assistants, and we have also had opportunities of personally testing their capacity both in the field and at headquarters. Whilst I am perfectly aware of their inability to carry out geological researches of an original character, and have shown clearly that it is not easy to obtain a native educated in this country the all-round qualities required in a geologist, I am of opinion that the work done by the two Sub-Assistants shows that in certain subordinate, but none the less essential, phases of geological work, the native educated in this country can be profitably employed in the Geological Survey.

4. The valuable features which have been discovered in the two Sub-Assistants who were appointed 30 years ago, when scientific education was less developed in India, should be obtainable now in a more satisfactory degree. With the possibility of obtaining a better class of recruit, there is the supplementary fact that geological work generally, and the work of this Department in particular, has developed in a way which permits of the regulation of many mechanical details to a subordinate staff. In the early days of the Survey, when the geological features of the country were being unravelled and classified for the first time, and when, on account of the absence of systematic work in related areas, geological science had to be formulated *de novo* for India, it was essential that every officer of the Department should be fully qualified for original work, and there was little or no call for the mechanical operations of subordinates. And although there is still a field for the original worker, and still the same call for the class of geologist defined by Mr. Medlicott in paragraphs 4 and 5 of his letter No. 295 of the 15th November 1879, there is, in addition to and as the outcome of the high grade of scientific work done by previous officers of the Department, a considerable amount of mechanical, though not *purely* mechanical, work which can most economically be done by intelligent subordinates—work that requires an appreciation of the principles of geology, without necessarily involving the mental qualifications required of the original worker. The collecting of specimens from recognized formations, the outlining of simple formations on the map, and the superintendence of prospecting operations are amongst the duties which are essential in a well organized geological survey, and which, without intelligent subordinate assistance, would involve a waste of time on the part of a more highly paid officer fitted for scientific work. In the same way at headquarters, the registration of specimens, the preparation of microscopic slides, the carrying out of simple assays, the segregation of technical matters from routine files, and the indexing of publications are functions beyond the ability of the ordinary clerk, and yet are such that need not be allowed to devour the time of a fully qualified scientific officer. In all these points both the Department and Geology have developed since Mr. Medlicott's days, largely, in fact, as the outcome of the genius and industry of himself and his colleagues; and I think he would agree with me that there are now many more reasons than formerly for employing native subordinates in this Department, without, however, introducing the unrelated question which apparently disturbed Mr. Medlicott, of their fitness for promotion to the higher grades.

5. I would therefore propose that the posts of Sub-Assistants be maintained, and that for the vacancy now caused by the retirement of Sub-Assistant Kishen Singh, I may be allowed to take steps to select a suitable candidate.

6. With regard to the salary to be offered for these posts, I would suggest, as we are able now to obtain a better educated class to draw from than was possible 30 years ago, that the initial salary be fixed at Rs. 100 a month, with a rise to Rs. 150 on completion of a satisfactory probation of 2 years, and that thereafter, on approved work, annual increments of Rs. 10 be granted, subject to a maximum pay of Rs. 300 a month. It will be noticed that this proposal cuts out the apprenticeship period, as it was described when the two Sub-Assistants were first appointed, and my reason for making this suggestion is that I know of at least two students in India at present who are, I think, qualified for immediate appointment to the grade of Sub-Assistants, the recent development of the Universities having accomplished the work which the Government, according to Mr. Hume's letter No. 44 of the 13th May 1879, considered to be one of the functions of the Geological Survey.

7. The failure to bring this matter to the notice of Government some five years ago, in anticipation of the retirement of the two Sub-Assistants, deprives us of the privilege of having a long probationary period; but the fact that there are suitable candidates at present available should influence a decision in favour of immediate appointment.

8. I take it for granted that the wording of the footnote in Resolution No. 3—74 of the 8th March 1893, referred to above in paragraph 2, implies that the whole question of employing Sub-Assistants would be revived on the

retirement of those then on the list. The proposal made in paragraph 5 is thus intended to raise this question, and in asking permission to fill up the vacancy caused by Kishen Singh's retirement, I wish also to obtain the permission of Government to take similar steps with regard to the vacancy which will probably be caused shortly by the retirement of Sub-Assistant Hira Lal.

No. 15.

No. 56 (Geology and Minerals), dated 19th October 1911.

From—The Government of India,

To—His Majesty's Secretary of State for India.

We have the honour to forward copy of a letter from the Director, Geological Survey of India, No. 5773, dated the 25th September 1911, on the subject of the appointment of an Artist for the Geological Survey Department.

2. It will be seen from Mr. Hayden's letter that the attempt to fill the post locally has been unsuccessful. We request, therefore, that a suitable Artist may be engaged by Your Lordship on a salary of of Rs. 250—25—400 a month. The candidate should be appointed on probation for the first two years.

3. We would suggest that Sir T. Holland, who is acquainted with the requirements of the Department, may be requested to assist in the selection of a candidate.

No. 5773, dated Calcutta, the 25th September 1911.

From—H. H. HAYDEN, Esq., B.A., F.G.S., Director, Geological Survey of India,

To—The Secretary to the Government of India, Department of Commerce and Industry.

I have the honour to inform you that Mr. H. B. W. Garrick, Artist to this Department, has applied for permission to retire on completion of 30 years' service, and that it is probable that he will leave India in the first or second week of November. On the abolition of certain posts in the Archæological Department, Mr. Garrick's services were transferred to the Geological Survey in the year 1891, the former Artist, Mr. Jules Schaumburg, having died in the year 1886 after having completed 17 years' service.

2. On the retirement of Mr. Garrick, I shall be confronted with the serious difficulty of finding a suitable successor. Mr. Schaumburg was a European Artist of considerable talent, who had had a special training, which fitted him for the post of Artist to the Geological Survey. On his death, considerable difficulty was experienced in finding a successor, and it was not until the fortuitous abolition of Mr. Garrick's former appointment rendered his services available, that it was possible to find a suitable man. I am now confronted by a similar difficulty, but one which is greater, owing to the fact that the work of the Drawing Office has considerably increased of recent years and has been further complicated by the addition of a plant for the reproduction of plates by the half-tone process. For some time past I have been endeavouring to find in India a suitable successor to Mr. Garrick. Such a man must be not only a good artist familiar with line and lithographic work, but must understand also map colouring and the half-tone process, and must furthermore be capable of supervising the work of the whole staff of the Drawing Office and the lithographic press. It is naturally difficult to obtain the services of a man who will meet all the above requirements, for a salary of Rs. 250—25—400, and I have failed in my efforts to find a suitable man in India. I think, however, on the other hand, that the services of such a man might be obtained in England, although it must be admitted that the conditions of life in Calcutta are now such as to render the pay offered smaller than is likely to attract a first class man. Mr. Garrick, however, during his recent visits to England on leave, kept himself in touch with modern processes in connection with his own work, and has thereby been brought into contact with men of the type that we require. He bears out my opinion that it would not improbably be possible to obtain the services of a man who has been trained at one or other of the English Polytechnics.

3. I would, therefore, suggest, for the favourable consideration of Government, that the Right Honourable the Secretary of State be asked to appoint a suitable man at the earliest possible date. I may mention that Sir Thomas Holland is aware of the exact qualifications required, and, should the Secretary of State think fit to consult him, he would no doubt be glad to interview candidates and make a suitable selection. I would recommend that the candidate appointed should be on probation for the first two years.